1. 一种用于床垫的内胆，其特征在于，所述用于床垫的内胆包括底内胆，所述底内胆包括沿所述底内胆的厚度方向由下至上依次层叠的第一海绵层、弹簧层、第二海绵层和松棉层。

2. 根据权利要求 1 所述的用于床垫的内胆，其特征在于，所述弹簧层由多个相互独立的袋装弹簧组成。

3. 根据权利要求 2 所述的用于床垫的内胆，其特征在于，还包括位于所述弹簧层的边缘的加固层。

4. 根据权利要求 3 所述的用于床垫的内胆，其特征在于，所述加固层为第三海绵层。

5. 根据权利要求 1-4 中任一项所述的用于床垫的内胆，其特征在于，所述内胆包括叠放在所述底内胆上的顶内胆，所述顶内胆包括沿所述顶内胆的厚度方向由下至上依次层叠的高分子垫层、负离子乳胶层、3D 材料层和竹炭乳胶层。

6. 一种床垫，其特征在于，包括根据权利要求 1-5 中任一项所述的用于床垫的内胆，以及包裹所述内胆的壳套。

7. 根据权利要求 6 所述的床垫，其特征在于，所述壳套包括壳套面、壳套底和围子，所述壳套面和壳套底分别与所述围子连接以形成密封的壳套。

8. 根据权利要求 7 所述的床垫，其特征在于，所述壳套面包括由下至上依次层叠设置的第一无纺布层、波浪棉层、3D 网布层、第四海绵层、洗水棉层、蚕丝针刺棉层与第一针织布层。

9. 根据权利要求 7 所述的床垫，其特征在于，所述壳套底为阻燃面料。

10. 根据权利要求 7-9 中任一项所述的床垫，其特征在于，所述围子包括由内向外依次层叠的第二针织布层、无胶棉层、第五海绵层和第二无纺布层。

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用于床垫的内胆及床垫

技术领域

[0001] 本实用新型涉及家居用品技术领域，尤其是涉及一种用于床垫的内胆及床垫。

背景技术

[0002] 睡眠是健康之本，想要拥有健康的睡眠，除了工作、生活、身体、心理等方面的原因外，拥有卫生、舒适、美观、耐用的健康寝具是获得高质量睡眠的关键所在。寝具包括床、床垫、被褥等，睡觉时，床垫直接与使用者的身体接触，健康舒适的床垫能够保证使用者获得健康而又舒适的睡眠。

[0003] 然而，现有技术中的床垫一般简单的使用海绵或者棕榈纤维制作，这类床垫的承托性能差，易塌陷变形，舒适度不高。

实用新型内容

[0004] 本实用新型的目的在于提供一种用于床垫的内胆及床垫，以解决现有技术中存在的床垫易塌陷变形，承托性能差，舒适度不高的缺陷。

[0005] 本实用新型提供一种用于床垫的内胆，其中，所述用于床垫的内胆包括底内胆，所述底内胆包括沿所述底内胆的厚度方向由下至上依次层叠的第一海绵层、弹簧层、第二海绵层和松棉层。

[0006] 进一步地，所述弹簧层由多个相互独立的袋装弹簧组成。

[0007] 进一步地，还包括位于所述弹簧层的边缘的加固层。

[0008] 进一步地，所述加固层为第三海绵层。

[0009] 进一步地，所述内胆包括叠放在所述底内胆上的顶内胆，所述顶内胆包括沿所述顶内胆的厚度方向由下至上依次层叠的高分子垫层、负离子乳胶层、3D 材料和竹炭乳胶层。

[0010] 本实用新型还提供一种床垫，其中，所述床垫包括根据本实用新型所述的用于床垫的内胆，以及包裹所述内胆的壳套。

[0011] 进一步地，所述壳套包括壳套面、壳套底和围子，所述壳套面和壳套底分别与所述围子连接以形成密封的壳套。

[0012] 进一步地，所述壳套面包括由下至上依次层叠设置的第一无纺布层、波浪棉层、3D 网布层、第四海绵层、洗水棉层、蚕丝针刺棉层与第一针织布层。

[0013] 进一步地，所述壳套底为阻燃面料。

[0014] 进一步地，所述围子包括由内向外依次层叠的第二针织布层、无胶棉层、第五海绵层和第二无纺布层。

[0015] 本实用新型提供的用于床垫的内胆包括由下至上依次层叠的第一海绵层、弹簧层、第二海绵层和松棉层，其中，第一海绵层和第二海绵层起到防震、抗干扰、保暖的作用；弹簧层能够增加内胆的承托性能，防止床垫塌陷变形；松棉层能够增加内胆的透气性，并且防止噪音。因此，包含该内胆的床垫的的承托性能强，不易塌陷变形，并且舒适度高。

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附图说明

[0016] 为了更清楚地说明本实用新型具体实施方式或现有技术中的技术方案，下面将对具体实施方式或现有技术描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图是本实用新型的一些实施方式，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。

[0017] 图 1 为本实用新型实施例提供的床垫的结构示意图（其中包含了本实用新型的用于床垫的内胆）。

[0018] 附图标记：

[0019] 11- 底内胆；12- 顶内胆；

[0020] 111- 第一海绵层；112- 弹簧层；

[0021] 113- 第二海绵层；114- 松棉层；

[0022] 115- 加固层；

[0023] 121- 高分子垫层；122- 负离子乳胶层；

[0024] 123-3D 材料层；124- 竹炭乳胶层；

[0025] 21- 壳套面；22- 壳套底；

[0026] 23- 围子。

具体实施方式

[0027] 下面将结合附图对本实用新型的技术方案进行清楚、完整地描述，显然，所描述的实施例是本实用新型一部分实施例，而不是全部的实施例。基于本实用新型中的实施例，本领域普通技术人员在没有做出创造性劳动前提下所获得的所有其他实施例，都属于本实用新型保护的范围。

[0028] 在本实用新型的描述中，需要说明的是，术语“中心”、“上”、“下”、“左”、“右”、“竖直”、“水平”、“内”、“外”等指示的方位或位置关系为基于附图所示的方位或位置关系，仅是为了便于描述本实用新型和简化描述，而不是指示或暗示所指的装置或元件必须具有特定的方位、以特定的方位构造和操作，因此不能理解为对本实用新型的限制。此外，术语“第一”、“第二”、“第三”仅用于描述目的，而不能理解为指示或暗示相对重要性。

[0029] 在本实用新型的描述中，需要说明的是，除非另有明确的规定和限定，术语“安装”、“相连”、“连接”应做广义理解，例如，可以是固定连接，也可以是可拆卸连接，或一体地连接；可以是机械连接，也可以是电连接；可以是直接相连，也可以通过中间媒介间接相连，可以是两个元件内部的连通。对于本领域的普通技术人员而言，可以具体情况理解上述术语在本实用新型中的具体含义。

[0030] 在本实用新型的描述中，需要说明的是，厚度方向是指图 1 中的上下方向。

[0031] 图 1 为本实用新型实施例提供的用于床垫的内胆的结构示意图；根据本实用新型的一个方面，提供一种用于床垫的内胆，如图 1 所示，所述用于床垫的内胆包括底内胆 11，所述底内胆 11 包括沿所述底内胆 11 的厚度方向由下至上依次层叠的第一海绵层 111、弹簧层 112、第二海绵层 113 和松棉层 114。

[0032] 第一海绵层 111 和第二海绵层 113 起到防震、抗干扰、保暖的作用，并能增加舒适度。

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[0033] 弹簧层 112 的作用是增加弹性和承托力，放置内胆塌陷变形，延长内胆的使用寿命。

[0034] 松棉层 114 的作用是，增加内胆的透气性，并且环保，能够防止噪音。

[0035] 由此可见，本实用新型提供的用于床垫的内胆包括由下至上依次层叠的第一海绵层 111、弹簧层 112、第二海绵层 113 和松棉层 114，其中，第一海绵层 111 和第二海绵层 113 起到防震、抗干扰、保暖的作用；弹簧层 112 能够增加内胆的承托性能，防止床垫塌陷变形；松棉层 114 能够增加内胆的透气性，并且防止噪音。因此，包含该内胆的床垫的承托性能强，不易塌陷变形，并且舒适度高。

[0036] 其中，第一海绵层 111、弹簧层 112、第二海绵层 113 和松棉层 114 的厚度依次为 2cm、15cm、2cm 和 3cm。

[0037] 海绵的密度越高，说明里面的空隙越小，质量也就越大。例如：40 密度是指一个立方米海绵的重量是 40 公斤，50 密度的就是 50KG 每立方米。第一海绵层 111 和第二海绵层 113 的密度可以为 $40kg/m^3$。

[0038] 进一步地，如图 1 所示，所述弹簧层 112 由多个相互独立的袋装弹簧组成。多个相互独立的袋装弹簧依次排列形成所述弹簧层 112。多个袋装弹簧相互独立依次排列方便加工、组装，并且便于更换维修。

[0039] 进一步地，本实施例提供的用于床垫的内胆还包括位于所述弹簧层 112 的边缘的加固层 115。如图 1 所示，该加固层 115 位于第一海绵层 111 和第二海绵层 113 之间，对弹簧层 112 的边缘进行加固，提高整个内胆的支撑性能。

[0040] 进一步地，所述加固层 115 为第三海绵层。如图 1 所示，第三海绵层的长度方向与底内胆 11 的厚度方向平行。

[0041] 进一步地，所述内胆包括叠放在所述底内胆 11 上的顶内胆 12，所述顶内胆 12 包括沿所述顶内胆 12 的厚度方向由下至上依次层叠的高分子垫层 121、负离子乳胶层 122、3D 材料层 123 和竹炭乳胶层 124。

[0042] 其中，高分子垫层 121 具有密度低、耐磨性好、耐腐蚀性高、防水透气、电绝缘的优点。

[0043] 其中，负离子乳胶层 122 能够向周围的空气中释放负离子，透气性腔。负离子乳胶层 122 可以对我们的心血管系统造成影响，负离子有明显扩张血管的作用，可解除动脉血管痉挛，达到降低血压的目的，负离子对于改善心脏功能和改善心肌营养也大有好处，有利于高血压和心脑血管疾患病人的病情恢复。负离子乳胶床垫对我们的神经系统可以影响，可使大脑皮层功能及脑力活动加强，精神振奋，工作效率提高，能使睡眠质量得到改善。负离子还可使脑组织的氧化过程力度加强，使脑组织获得更多的氧。负离子乳胶床垫还会对我们的血液系统造成影响。负离子有使血液变慢、延长凝血时间的作用，能使血中含氧量增加，有利于血氧输送、吸收和利用。

[0044] 3D 材料层 123 具有以下优良特性：透气性和弹性好，支撑性强，能够对人体起到缓冲保护的作用，并且环保无毒。因此，包含该 3D 材料层 123 的壳套进一步度提高了床垫的舒适度。

[0045] 竹炭乳胶层 124 是由竹炭乳胶材质制成的，其中，竹炭乳胶能够净化空气，释放负离子改善人体肺功能，加速新陈代谢，以及防菌防电防噪音。

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[0046] 其中，高分子垫层 121、负离子乳胶层 122、3D 材料层 123 和竹炭乳胶层 124 的厚度可依次为 3cm、3cm、2cm 和 3cm。

[0047] 根据本实用新型的另一方面，提供一种床垫，如图 1 所示，所述床垫包括根据本实用新型所述的用于床垫的内胆，以及包裹所述内胆的壳套。壳套对包裹于壳套内的内胆起到保护和加固的作用。

[0048] 如图 1 所示，所述壳套包括壳套面 21、壳套底 22 和围子 23，所述壳套面 21 和壳套底 22 分别与所述围子 23 连接以形成密封的壳套。壳套将用于床垫的内胆密封包裹。

[0049] 进一步地，如图 1 所示，所述壳套面 21 包括由下至上依次层叠设置的第一无纺布层、波浪棉层、3D 网布层、第四海绵层、洗水棉层、蚕丝针刺棉层与第一针织布层。

[0050] 其中，第一无纺布层是由无纺布制成，无纺布又称不织布，是由定向的或随机的纤维而构成，是新一代环保材料，具有防潮、透气、柔韧、质轻、不助燃、容易分解、无毒无刺激性、色彩丰富、价格低廉、可循环再用等优点。

[0051] 其中，波浪棉层由波浪棉制成，波浪棉表面为波浪形，具有吸音按摩功能，质量轻，耐高温，隔热阻燃。因此，具有波浪棉层的壳套防燃，安全系数高。

[0052] 其中，3D 网布层由 3D 网布制成，3D 网布是俗称特厚三明治网眼布，是一种透气性，弹性，支撑性都很出色的新型纯织物材料。包含该 3D 网布层的壳套大大提高了床垫的舒适度，使床垫具有以下优点：(1) 既能保护皮肤不受液体和微粒的污染，又能使皮肤透气；(2) 有效防止细菌和真菌的感染；(3) 质地轻，洗涤消毒方便，抗静电；(4) 回弹性好，提供缓冲保护，易洗快干；(5) 化学整理剂和燃料用量少，无污染，着火点低；(6) 湿热舒适性佳；(7) 良好的机械性能和化学稳定性；(8) 环保无毒，防潮防霉，可以回收再用。

[0053] 第四海绵层起到防震、抗干扰、保暖的作用，并能增加舒适度。

[0054] 其中，洗水棉层是由洗水棉制成，洗水棉是可以用水洗的棉。洗水棉是以棉布为原料，经过特别处理后使织物表面色调、光泽更加柔和，手感更加柔软。包含洗水棉层的壳套，厚度均匀、拉力好，耐水洗，不易烂散成团。

[0055] 其中，针刺棉是不经过纺织，直接将纤维用针刺成絮片的一种产品。本实用新型中的蚕丝针刺棉层采用蚕丝针刺棉制成，蚕丝针刺棉层具有绝缘、伸展性好、抗脆化、耐酸、耐碱、耐湿等优良性能。

[0056] 第一针织布层采用针织布制成，具有质地柔软、吸湿透气、排汗保暖、弹性与延伸性良好的优点。

[0057] 进一步地，所述壳套底 22 由阻燃面料制成，该壳套底 22 能够阻热阻燃，防止床垫燃烧，提高使用安全性。

[0058] 进一步地，所述围子 23 包括由内向外依次层叠的第二针织布层、无胶棉层、第五海绵层和第二无纺布层。围子 23 的厚度方向是指图 1 中的左右方向，围子 23 的厚度可以是 1cm。本实施例中所述的由内而外只指由围子 23 的靠近内胆的一侧向远离内胆的一侧。

[0059] 其中，第二针织布层采用针织布制成，具有质地柔软、吸湿透气、排汗保暖、弹性与延伸性良好的优点。

[0060] 无胶棉层由无胶棉制成，无胶棉非常松软，强度好，耐洗，对人体无刺激，并且具有弹性好，柔软、滑爽、保暖性好、环保的优点。

[0061] 第五海绵层起到防震、抗干扰、保暖的作用，并能增加舒适度。

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[0062] 第二无纺布层由无纺布制成，第二无纺布层具有防潮、透气、柔韧、质轻、不助燃、容易分解、无毒无刺激性、色彩丰富、价格低廉、可循环再用等优点。

[0063] 本实用新型提供的床垫安全舒适，与现有的床垫相比，透气性、绝缘性、防燃性都得到大大提高。

[0064] 本实用新型提供的床垫可以做成单人床垫，也可以是双人床垫。做成双人床垫时，床垫的整体尺寸为：长 2000mm，宽 1800mm，厚 400mm。

[0065] 最后应说明的是：以上各实施例仅用以说明本实用新型的技术方案，而非对其限制；尽管参照前述各实施例对本实用新型进行了详细的说明，本领域的普通技术人员应当理解：其依然可以对前述各实施例所记载的技术方案进行修改，或者对其中部分或者全部技术特征进行等同替换；而这些修改或者替换，并不使相应技术方案的本质脱离本实用新型各实施例技术方案的范围。

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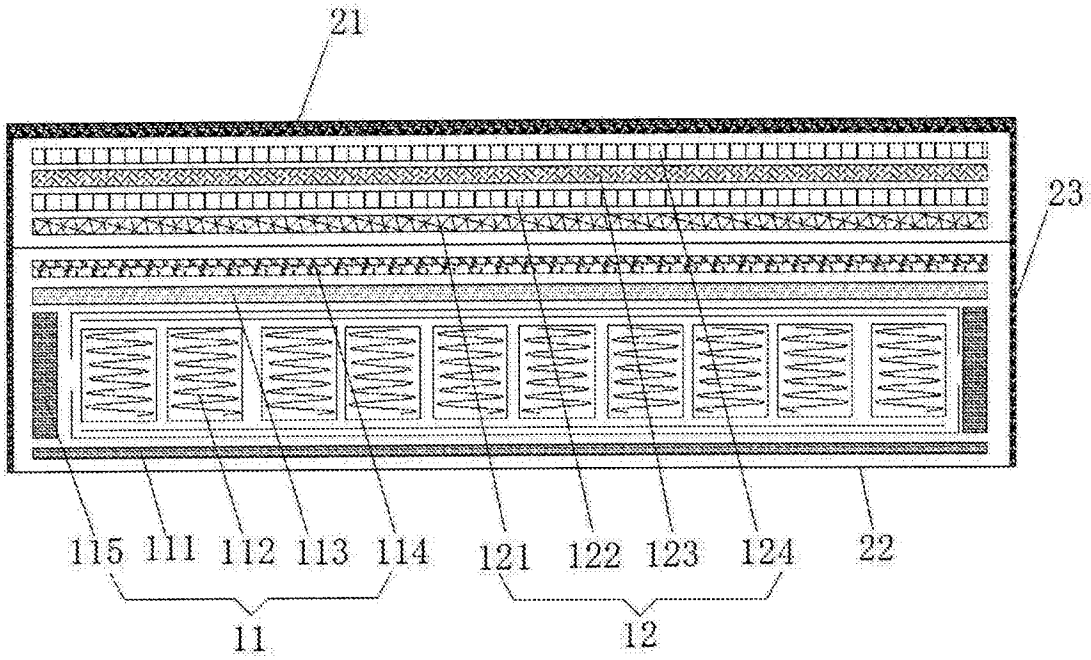


图 1

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Ventilative worry fungus mattress

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Classification: - international: *A47C27/05; A47C27/22*
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Abstract of CN205321883 (U)

The utility model provides a ventilative worry fungus mattress, include the core and be used for the cladding to live the cotton cover of core, the core is the cuboid form, the core is including continuous layer of the lower blasting that stacks gradually, spring layer and go up the continuous layer of blasting, still around being equipped with the continuous layer of side blasting on the side of core, the spring layer is in by complete cladding upward continuous layer of blasting down the continuous layer of blasting with in the space that enclose on the continuous layer of side blasting. Because the continuous gas permeability that has the excellence of blasting, good elasticity, higher mechanical strength and better filtering quality, dust and bacterium in the ability effective filtration air, through setting up the continuous layer of blasting, continuous layer of blasting and side blasting are continuous layer down, and with the complete cladding in spring layer on the continuous layer of last blasting, in the space that enclose on continuous layer of blasting and the continuous layer of side blasting down, guarantee that the mattress has better worry fungus nature when having better gas permeability, can avoid the mould dot OR deposit bacterium of the inside product of mattress, guarantee human health.

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(12)实用新型专利

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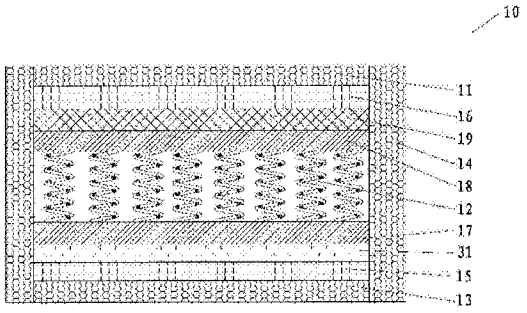
权利要求书1页 说明书3页 附图2页

(54)实用新型名称

一种透气虑菌床垫

(57)摘要

本实用新型提供一种透气虑菌床垫，包括芯体和用于包覆住所述芯体的棉布套，所述芯体呈长方体状，所述芯体包括依次层叠的下爆破绵层、弹簧层和上爆破绵层，所述芯体的侧面上还绕设有侧爆破绵层，所述弹簧层被完全包覆在所述上爆破绵层、所述下爆破绵层和所述侧爆破绵层所围成的空间内。由于爆破绵具有优异的透气性、良好的弹性、较高的机械强度以及较好的过滤性能，能有效过滤空气中的粉尘和细菌，通过设置上爆破绵层、下爆破绵层和侧爆破绵层，并将弹簧层完全包覆在上爆破绵层、下爆破绵层和侧爆破绵层所围成的空间内，确保床垫在具有较好的透气性的同时具有较好的虑菌性，能避免床垫内部产霉点或沉积细菌，保证人体的健康。



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1.一种透气虑菌床垫，包括芯体和用于包覆住所述芯体的棉布套，所述芯体呈长方体状，其特征在于，所述芯体包括依次层叠的下爆破绵层、弹簧层和上爆破绵层，所述芯体的侧面上还绕设有侧爆破绵层，所述弹簧层被完全包覆在所述上爆破绵层、所述下爆破绵层和所述侧爆破绵层所围成的空间内。

2.如权利要求1所述的透气虑菌床垫，其特征在于，所述下爆破绵层、所述上爆破绵层和所述侧爆破绵层的厚度分别为1cm-10cm。

3.如权利要求1或2所述的透气虑菌床垫，其特征在于，所述棉布套为透气棉布套。

4.如权利要求1或2所述的透气虑菌床垫，其特征在于，所述下爆破绵层与所述弹簧层之间设置有下高密海绵层，所述上爆破绵层与所述弹簧层之间设置有上高密海绵层。

5.如权利要求4所述的透气虑菌床垫，其特征在于，所述下高密海绵层与所述弹簧层之间设置有下棉毡层，所述上高密海绵层与所述弹簧层之间设置有上棉毡层。

6.如权利要求5所述的透气虑菌床垫，其特征在于，所述上高密海绵层与所述上棉毡层之间设置有乳胶层。

7.如权利要求5或6所述的透气虑菌床垫，其特征在于，所述下高密海绵层与所述下棉毡层之间设置有3E椰梦维层。

8.如权利要求7所述的透气虑菌床垫，其特征在于，所述弹簧层为邦尼尔整体弹簧结构。

9.如权利要求7所述的透气虑菌床垫，其特征在于，所述弹簧层为独立袋装弹簧结构。

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一种透气虑菌床垫

技术领域

[0001] 本实用新型涉及一种床上用品，尤其是一种透气虑菌床垫。

背景技术

[0002] 床垫是一种用于保证人体睡眠舒适性的介于人体和床板之间的床上用品。目前市场上的床垫有多种类型，主要有弹簧床垫、棕榈床垫、乳胶床垫、水床垫、气床垫、磁床垫等，在这些床垫中，弹簧床垫是现代常用的、性能较优的床垫，其具有弹性好，耐用等优点，深受人们的喜爱。

[0003] 传统的弹簧床垫要么透气性较差，要么虑菌性较差，难以两全；对于透气性较差的弹簧床垫，其密封芯一般相对较好，外部的粉尘和细菌不易进入床垫内部，但是人躺在床垫上睡觉时容易流汗，汗液会渗入床垫内部，长时间后会有霉点产生，不利人体健康；对于透气性较好的弹簧床垫，其虑菌性一般相对较差，空气中的粉尘和细菌容易进入床垫内部，进而在床垫内部沉积，同样不利人体的健康。

[0004] 有鉴于此，本申请人对床垫的透气性和虑菌性进行了深入的研究，遂有本案产生。

实用新型内容

[0005] 本实用新型的目的在于提供一种能避免床垫内部产霉点或细菌的透气性和虑菌性都相对较好的透气虑菌床垫。

[0006] 为了实现上述目的，本发明采用如下技术方案：

[0007] 一种透气虑菌床垫，包括芯体和用于包覆住所述芯体的棉布套，所述芯体呈长方体状，所述芯体包括依次层叠的下爆破绵层、弹簧层和上爆破绵层，所述芯体的侧面上还绕设有侧爆破绵层，所述弹簧层被完全包覆在所述上爆破绵层、所述下爆破绵层和所述侧爆破绵层所围成的空间内。

[0008] 作为本实用新型的一种改进，所述下爆破绵层、所述上爆破绵层和所述侧爆破绵层的厚度分别为1cm-10cm。

[0009] 作为本实用新型的一种改进，所述棉布套为透气棉布套。

[0010] 作为本实用新型的一种改进，所述下爆破绵层与所述弹簧层之间设置有下高密海绵层，所述上爆破绵层与所述弹簧层之间设置有上高密海绵层。

[0011] 作为本实用新型的一种改进，所述下高密海绵层与所述弹簧层之间设置有下棉毡层，所述上高密海绵层与所述弹簧层之间设置有上棉毡层。

[0012] 作为本实用新型的一种改进，所述上高密海绵层与所述上棉毡层之间设置有乳胶层。

[0013] 作为本实用新型的一种改进，所述下高密海绵层与所述下棉毡层之间设置有3E椰梦维层。

[0014] 作为本实用新型的一种改进，所述弹簧层为邦尼尔整体弹簧结构。

[0015] 作为本实用新型的一种改进，所述弹簧层为独立袋装弹簧结构。

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[0016] 采用上述技术方案，本实用新型具有以下有益效果；

[0017] 由于爆破绵具有优异的透气性、良好的弹性、较高的机械强度以及较好的过滤性能，能有效过滤空气中的粉尘和细菌，通过设置上爆破绵层、下爆破绵层和侧爆破绵层，并将弹簧层完全包覆在上爆破绵层、下爆破绵层和侧爆破绵层所围成的空间内，确保床垫在具有较好的透气性的同时具有较好的虑菌性，能避免床垫内部产霉点或沉积细菌，保证人体的健康。

[0018] 此外，当人躺在床垫上流汗时，汗液中的细菌在经过相应的爆破绵层时也会被过滤掉，不易产生霉点。

附图说明

[0019] 图1为本实用新型透气虑菌床垫的立体示意图；

[0020] 图2为本实用新型透气虑菌床垫的芯体的剖面结构示意图。

[0021] 图中标示对应如下：

[0022] 10-芯体； 11-下爆破绵层；

[0023] 12-弹簧层； 13-上爆破绵层；

[0024] 14-侧爆破绵层； 15-下高密海绵层；

[0025] 16-下高密海绵层； 17-下棉毡层；

[0026] 18-上棉毡层； 19-乳胶层；

[0027] 20-棉布套； 31-3E椰梦维层。

具体实施方式

[0028] 下面结合附图和具体实施例对本实用新型做进一步的说明。

[0029] 如图1和图2所示，本实施例提供的透气虑菌床垫，包括芯体10和用于包覆住芯体10的棉布套20，棉布套20为常规床垫所使用的棉布套，优选为透气棉布套，此处不再详述。

[0030] 芯体10呈长方体状，芯体10包括从下到上依次层叠的下爆破绵层11、弹簧层12和上爆破绵层13，芯体10的侧面上还绕设有侧爆破绵层14，弹簧层12被完全包覆在上爆破绵层11、下爆破绵层13和侧爆破绵层14所围成的空间内，这样可确保外部空气与床垫内部的空气对流都需要经过相应的爆破绵层。

[0031] 由于爆破绵也成为网状海绵或过滤海绵，具有优异的透气性、良好的弹性、较高的机械强度以及较好的过滤性能，能有效过滤空气中的粉尘和细菌，通过设置上爆破绵层11、下爆破绵层13和侧爆破绵层14代替传统床垫所使用的高密海绵，并将弹簧层12完全包覆在上爆破绵层11、下爆破绵层13和侧爆破绵层14所围成的空间内，确保床垫在具有较好的透气性的同时具有较好的虑菌性，能避免床垫内部产霉点或沉积细菌，当人躺在床垫上流汗时，汗液中的细菌在经过相应的爆破绵层时也会被过滤掉，不易产生霉点，保证人体的健康。

[0032] 弹簧层12为可为邦尼尔整体弹簧结构，也可以为为独立袋装弹簧结构。下爆破绵层11、上爆破绵层13和侧爆破绵层14的厚度分别为1cm-10cm，具体厚度可以根据实际需要确定。

[0033] 当然，本实施例中的床垫还可以在相应的爆破绵层和弹簧层12之间设置设置其他

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材质的垫层以增加床垫的功能性。在本实施例中，下爆破绵层11与弹簧层12之间设置有下高密海绵层15，上爆破绵层13与弹簧层12之间设置有上高密海绵层16，通过保留传统的高密海绵层，确保床垫不至于过分柔软，确保睡眠舒适性。

[0034] 此外，在本实施例中，下高密海绵层15与弹簧层12之间设置有下棉毡层17，上高密海绵层16与弹簧层12之间设置有上棉毡层18，上高密海绵层16与上棉毡层18之间设置有乳胶层19，下高密海绵层15与下棉毡层17之间设置有3E椰梦维层31。

[0035] 上面结合附图对本实用新型做了详细的说明，但是本发明的实施方式并不仅限于上述实施方式，本领域技术人员根据现有技术可以对本发明做出各种变形，如将上述实施例中的乳胶层19变更为3D内胆层等，这些都属于本实用新型的保护范围。

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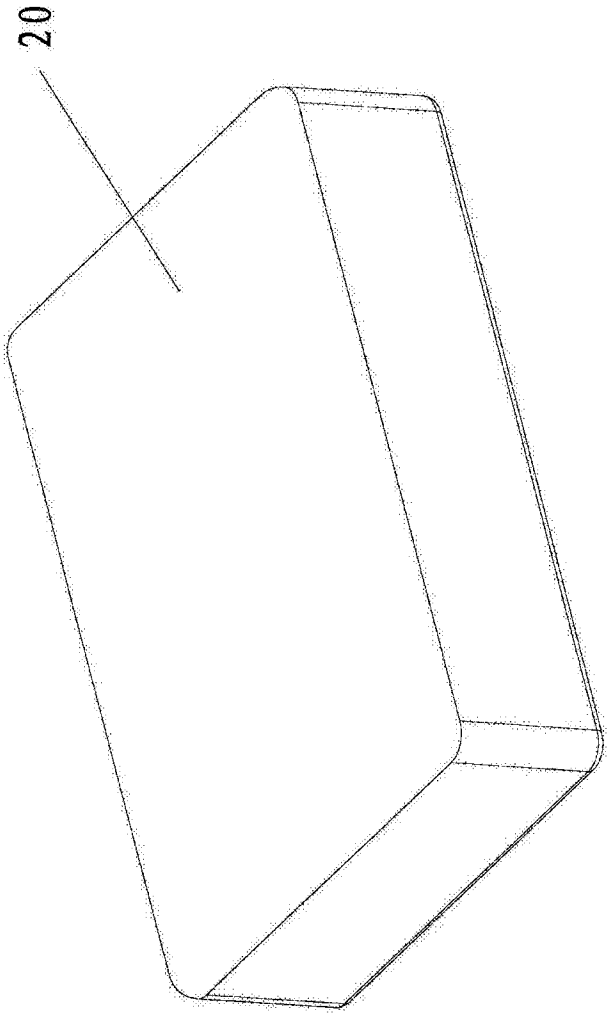


图1

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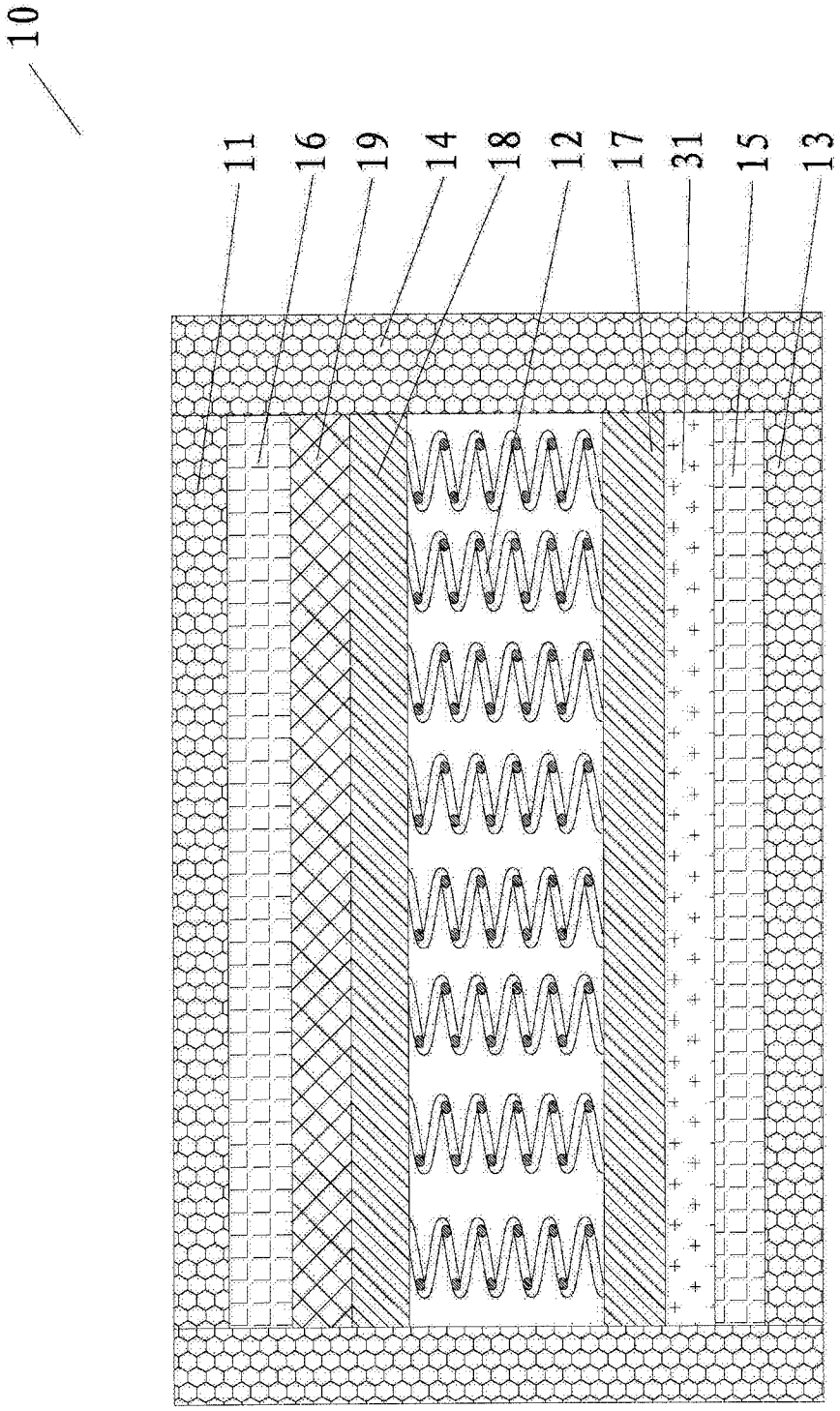


图2

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Espacenet

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A inner bag and mattress for mattress

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Applicant(s): CHONGQING WELAND MATTRESS FURNITURE CO LTD ± (CHONGQING WELAND MATTRESS FURNITURE CO., LTD)

Classification: **- international:** ***A47C27/04; A47C27/12***
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Application number: CN201520309248U 20150514

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Abstract of CN204838771 (U)

The utility model provides an inner bag and mattress for mattress, an inner bag includes end inner bag for the mattress, end inner bag includes the edge the thickness direction of end inner bag is by the lower supreme cotton layer of first pine that stacks gradually, spring layer, the cotton layer of stoving, the spring layer corresponds the human head to the first region of shoulder, the second district that corresponds human shoulder to waist, the third region of corresponding human buttock to foot according to vertically including in proper order, the elastic modulus on the spring layer in second district is greater than the elastic modulus on the spring layer in first region and second district. The utility model provides a take place that is used for the inner bag of mattress, when sleeping on the mattress according to the human body, and the weight of each regional human body that bears of mattress and set up different elastic modulus, the elastic modulus who corresponds the spring layer in the second district of human shoulder to waist is greater than the elastic modulus on the spring layer in first region and second district, and each human part can both obtain effectual support, and the travelling comfort height has prevented lumbar vertebrae disease scheduling problem .

(19)中华人民共和国国家知识产权局

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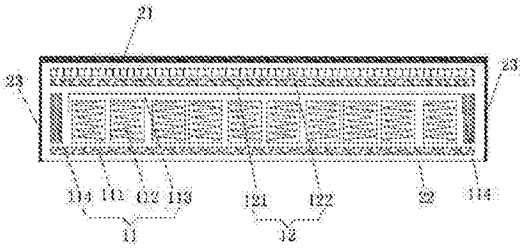
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(54)实用新型名称

用于床垫的内胆及床垫

(57)摘要

本实用新型提供了一种用于床垫的内胆及床垫，所述用于床垫的内胆包括底内胆，所述底内胆包括沿所述底内胆的厚度方向由下至上依次层叠的第一松棉层、弹簧层、热烘棉层；所述弹簧层按纵向依次包括对应人体头部至肩部的第一区、对应人体肩部至腰部的第二区、对应人体臀部至脚部的第三区，所述第二区的弹簧层的弹性模量大于所述第一区和第二区的弹簧层的弹性模量。本实用新型提供的用于床垫的内胆，根据人体睡在床垫上时，床垫各个区域所承受的人体的重量而设置不同的弹性模量，对应人体肩部至腰部的第二区的弹簧层的弹性模量大于第一区和第二区的弹簧层的弹性模量，人体的各个部分都能够得到有效的支撑，舒适性高，防止了腰椎疾病等问题的发生。



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1. 一种用于床垫的内胆，其特征在于，所述用于床垫的内胆包括底内胆，所述底内胆包括沿所述底内胆的厚度方向由下至上依次层叠的第一松棉层、弹簧层、热烘棉层；

所述弹簧层按纵向依次包括对应人体头部至肩部的第一区弹簧层、对应人体肩部至腰部的第二区弹簧层、对应人体臀部至脚部的第三区弹簧层，所述第二区弹簧层的弹性模量大于所述第一区弹簧层和第二区弹簧层的弹性模量。

2. 根据权利要求 1 所述的用于床垫的内胆，其特征在于，所述弹簧层由多个相互独立的袋装弹簧组成。

3. 根据权利要求 2 所述的用于床垫的内胆，其特征在于，所述底内胆还包括位于所述弹簧层的边缘的加固层。

4. 根据权利要求 3 所述的用于床垫的内胆，其特征在于，所述加固层为第一海绵层。

5. 根据权利要求 1-4 中任一项所述的用于床垫的内胆，其特征在于，所述内胆包括叠放在所述底内胆上的顶内胆，所述顶内胆包括沿所述顶内胆的厚度方向由下至上依次层叠的第二松棉层和乳胶层；所述乳胶层包括对应人体头部至肩部的第一区乳胶层、对应人体肩部至腰部的第二区乳胶层、对应人体臀部至脚部的第三区乳胶层，所述第二区乳胶层比所述第一区乳胶层和第二区乳胶层软。

6. 一种床垫，其特征在于，包括权利要求 1-5 中任一项所述的用于床垫的内胆，以及包裹所述内胆的壳套。

7. 根据权利要求 6 所述的床垫，其特征在于，所述壳套包括壳套面、壳套底和围子，所述壳套面和壳套底分别与所述围子连接以形成密封的壳套。

8. 根据权利要求 7 所述的床垫，其特征在于，所述壳套面包括由下至上依次层叠设置的第一无纺布层、波浪棉层、3D 网布层、第二海绵层、洗水棉层、蚕丝针刺棉层与第一针织布层。

9. 根据权利要求 7 所述的床垫，其特征在于，所述壳套底为阻燃面料。

10. 根据权利要求 7-9 中任一项所述的床垫，其特征在于，所述围子包括由内向外依次层叠的第二无纺布层、第三海绵层、无胶棉层和第二针织布层。

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用于床垫的内胆及床垫

技术领域

[0001] 本实用新型涉及家居用品技术领域，尤其是涉及一种用于床垫的内胆及床垫。

背景技术

[0002] 腰椎病是临床上的骨科常见病，造成这一疾病的原因有很多，但是除了少数由于外伤引起的以外，大多数还是由于在生活中不注意造成的。

[0003] 腰椎病是在外界因素的作用下，椎间盘的纤维环会破裂，髓核组织从破裂之处突出（或脱出）于后方或椎管内，导致相邻的组织，如脊神经根、脊髓等遭受刺激或压迫，从而产生腰部疼痛，或一侧下肢、双下肢麻木、疼痛等一系列临床症状。

[0004] 对腰椎的保养要从合适的床垫开始，一定要软硬适中，才能保证健康的睡眠，才能保护好脊椎。太软的床对人体支撑不足，不适合人体的正常生理弯曲，会使腰椎出现问题；床垫太硬，会让人在平卧和侧卧的时候，腰部处于悬空状态，肌肉保持紧张，也容易引发脊椎的病变。

[0005] 床垫的用途是为了使用者获得更好的睡眠，因此，在满足保健效果的前提下，需要兼顾其舒适性，以让使用者能够得到最好的睡眠质量。因此，选择一款软硬适中、符合人体睡眠状态的床垫可以有效的预防腰椎疾病。

[0006] 然而，现有技术中的床垫为了增加弹性，一般只是单纯的安装弹簧，但是安装的弹簧未针对人体的触点做专门的弹性设置，舒适度不佳，人在这种床垫上睡多了容易引发腰椎疾病题。

实用新型内容

[0007] 本实用新型的目的在于提供一种用于床垫的内胆及床垫，以解决现有技术中的床垫舒适度不佳，容易引发腰椎疾病的缺陷。

[0008] 本实用新型提供的用于床垫的内胆，包括底内胆，所述底内胆包括沿所述底内胆的厚度方向由下至上依次层叠的第一松棉层、弹簧层、热烘棉层；

[0009] 所述弹簧层按纵向依次包括对应人体头部至肩部的第一区弹簧层、对应人体肩部至腰部的第二区弹簧层、对应人体臀部至脚部的第三区弹簧层，所述第二区弹簧层的弹性模量大于所述第一区弹簧层和第二区弹簧层的弹性模量。

[0010] 进一步地，所述弹簧层由多个相互独立的袋装弹簧组成。

[0011] 进一步地，所述底内胆还包括位于所述弹簧层的边缘的加固层。

[0012] 进一步地，所述加固层为第一海绵层。

[0013] 进一步地，所述内胆包括叠放在所述底内胆上的顶内胆，所述顶内胆包括沿所述顶内胆的厚度方向由下至上依次层叠的第二松棉层和乳胶层；所述乳胶层包括对应人体头部至肩部的第一区乳胶层、对应人体肩部至腰部的第二区乳胶层、对应人体臀部至脚部的第三区乳胶层，所述第二区乳胶层比所述第一区乳胶层和第二区乳胶层软。

[0014] 本实用新型还提供一种床垫，所述床垫包括本实用新型所述的用于床垫的内胆，

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以及包裹所述内胆的壳套。

[0015] 进一步地，所述壳套包括壳套面、壳套底和围子，所述壳套面和壳套底分别与所述围子连接以形成密封的壳套。

[0016] 进一步地，所述壳套面包括由下至上依次层叠设置的第一无纺布层、波浪棉层、3D网布层、第二海绵层、洗水棉层、蚕丝针刺棉层与第一针织布层。

[0017] 进一步地，所述壳套底为阻燃面料。

[0018] 进一步地，所述围子包括由内向外依次层叠的第二无纺布层、第三海绵层、无胶棉层和第二针织布层。

[0019] 本实用新型提供的用于床垫的内胆，根据人体睡在床垫上时，床垫各个区域所承受的人体的重量而设置不同的弹性模量，即对人体的不同触点做专门的弹性设置，其中，人体的肩部至腰部重量较大，因此，对应人体肩部至腰部的第二区弹簧层的弹性模量大于第一区弹簧层和第二区弹簧层的弹性模量，也就是说，第二区弹簧层相对较硬，第一区弹簧层和第三区弹簧层相对较软，这种结构使得人体躺在具有该内胆的床垫上时，人体的各个部分都能够得到有效的支撑，对人体起到保健作用，舒适性高，防止了腰椎疾病等问题的发生。

附图说明

[0020] 为了更清楚地说明本实用新型具体实施方式或现有技术中的技术方案，下面将对具体实施方式或现有技术描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图是本实用新型的一些实施方式，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。

[0021] 图1为本实用新型实施例提供的床垫的结构示意图（其中包含了本实用新型的用于床垫的内胆）。

[0022] 附图标记：

[0023] 11-底内胆；12-顶内胆；

[0024] 111-第一松棉层；112-弹簧层；

[0025] 113-热烘棉层；114-加固层；

[0026] 121-第二松棉层；122-乳胶层；

[0027] 21-壳套面；22-壳套底；

[0028] 23-围子。

具体实施方式

[0029] 下面将结合附图对本实用新型的技术方案进行清楚、完整地描述，显然，所描述的实施例是本实用新型一部分实施例，而不是全部的实施例。基于本实用新型中的实施例，本领域普通技术人员在没有做出创造性劳动前提下所获得的所有其他实施例，都属于本实用新型保护的范围。

[0030] 在本实用新型的描述中，需要说明的是，术语“中心”、“上”、“下”、“左”、“右”、“竖直”、“水平”、“内”、“外”等指示的方位或位置关系为基于附图所示的方位或位置关系，仅是为了便于描述本实用新型和简化描述，而不是指示或暗示所指的装置或元件必须具有特定

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的方位、以特定的方位构造和操作，因此不能理解为对本实用新型的限制。此外，术语“第一”、“第二”、“第三”仅用于描述目的，而不能理解为指示或暗示相对重要性。其中，术语“第一位置”和“第二位置”为两个不同的位置。

[0031] 在本实用新型的描述中，需要说明的是，除非另有明确的规定和限定，术语“安装”、“相连”、“连接”应做广义理解，例如，可以是固定连接，也可以是可拆卸连接，或一体地连接；可以是机械连接，也可以是电连接；可以是直接相连，也可以通过中间媒介间接相连，可以是两个元件内部的连通。对于本领域的普通技术人员而言，可以具体情况理解上述术语在本实用新型中的具体含义。

[0032] 图 1 为本实用新型实施例提供的用于床垫的内胆的结构示意图；根据本实用新型的一个方面，提供一种用于床垫的内胆，如图 1 所示本实用新型提供的用于床垫的内胆，包括底内胆 11，所述底内胆 11 包括沿所述底内胆 11 的厚度方向（即图 1 中的上下方向）由下至上依次层叠的第一松棉层 111、弹簧层 112、热烘棉层 113；所述弹簧层 112 按纵向（即图 1 中的左右方向）依次包括对应人体头部至肩部的第一区、对应人体肩部至腰部的第二区、对应人体臀部至脚部的第三区，所述第二区的弹簧层 112 的弹性模量大于所述第一区和第二区的弹簧层 112 的弹性模量。第一区的弹簧层 112 的弹性模量可以与第二区的弹簧层 112 的弹性模量设置为相等，也可以设置为不相等。

[0033] 其中，第一松棉层 111 的作用是增加内胆的透气性，并且环保，能够防止噪音。第一松棉层 111 的厚度可以是 30mm。热烘棉层 113 由热烘棉材料制成，热烘棉层 113 光滑，手感柔软，非常舒适。如图 1 所示，热烘棉层 113 可以为 U 型，弹簧层 112 设置于热烘棉层 113 之内。

[0034] 其中，弹簧层 112 的作用是增加弹性和承托力，放置内胆塌陷变形，延长内胆的使用寿命。更进步一地，在本实施例提供的用于床垫的内胆中根据人体睡在床垫上时，床垫各个区域所承受的人体 的重量而将弹簧层 112 设置成三个区，三个区的弹簧层 112 独立设置。三个区的弹簧可以根据人体结构释放压力。

[0035] 本实用新型提供的用于床垫的内胆，根据人体睡在床垫上时，床垫各个区域所承受的人体的重量而设置不同的弹性模量，即对人体的不同触点做专门的弹性设置，其中，人体的肩部至腰部重量较大，因此，对应人体肩部至腰部的第二区的弹簧层 112 的弹性模量大于第一区和第二区的弹簧层 112 的弹性模量，也就是说，第二区的弹簧层 112 相对较硬，第一区和第三区的弹簧层 112 相对较软，这种结构使得人体躺在具有该内胆的床垫上时，人体的各个部分都能够得到有效的支撑，对人体起到保健作用，舒适性高，防止了腰椎疾病等问题的发生。

[0036] 进一步地，所述弹簧层 112 由多个相互独立的袋装弹簧组成。多个相互独立的袋装弹簧依次排列形成所述弹簧层 112。多个袋装弹簧相互独立依次排列方便加工、组装，并且便于更换维修。在图 1 所示的实施方式中，第一区的弹簧层 112 的长度为 652±20mm，第二区的弹簧层 112 的长度为 692±20mm，第三区的弹簧层 112 的长度为 652±20mm。第一区的弹簧层 112、第二区的弹簧层 112 和第三区的弹簧层 112 可以分别包括多个独立的袋装弹簧。同一区内的弹簧层 112 的弹性模量可以相同。

[0037] 进一步地，所述底内胆 11 还包括位于所述弹簧层 112 的边缘的加固层 114。如图 1 所示，该加固层 114 位于弹簧层 112 的两侧，对弹簧层 112 的边缘进行加固，提高整个内胆

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的支撑性能。

[0038] 进一步地，所述加固层 114 为第一海绵层。如图 1 所示，第一海绵层的长度方向与底内胆 11 的厚度方向平行，也就是说第一海绵层是竖直设置的。第一海绵层能够起到防震、抗干扰、保暖的作用，同时增加内胆的舒适性。第一海绵层的厚度（即图 1 中的左右方向的尺寸）为 50mm。

[0039] 进一步地，所述内胆包括叠放在所述底内胆 11 上的顶内胆 12，所述顶内胆 12 包括沿所述顶内胆 12 的厚度方向由下至上依次层叠的第二松棉层 121 和乳胶层 122；所述乳胶层 122 包括对应人体头部至肩部的第一区、对应人体肩部至腰部的第二区、对应人体臀部至脚部的第三区，所述第二区的乳胶层 122 比所述第一区和第二区的乳胶层 122 软。

[0040] 第二松棉层 121 的厚度可以是 30mm。第二松棉层 121 能够增加内胆的透气性，材质环保，还能够防止噪音。

[0041] 本实施例中的乳胶层 122 设置成三个区，能够根据人体结构调整舒适度和透气性，具有良好的支撑力，弹性佳，不易变形，并且还能防止螨虫，便于清洗。

[0042] 根据本实用新型的另一方面，提供一种床垫，所述床垫包括本实用新型所述的用于床垫的内胆，以及包裹所述内胆的壳套。

[0043] 进一步地，所述壳套包括壳套面 21、壳套底 22 和围子 23，所述壳套面 21 和壳套底 22 分别与所述围子 23 连接以形成密封的壳套。壳套对包裹于壳套内的内胆起到保护和加固的作用。

[0044] 进一步地，所述壳套面 21 包括由下至上依次层叠设置的第一无纺布层、波浪棉层、3D 网布层、第二海绵层、洗水棉层、蚕丝针刺棉层与第一针织布层。

[0045] 其中，第一无纺布层是由无纺布制成，无纺布又称不织布，是由定向的或随机的纤维而构成，是新一代环保材料，具有防潮、透气、柔韧、质轻、不助燃、容易分解、无毒无刺激性、色彩丰富、价格低廉、可循环再用等优点。

[0046] 其中，波浪棉层由波浪棉制成，波浪棉表面为波浪形，具有吸音按摩功能，质量轻，耐高温，隔热阻燃。因此，具有波浪棉层的壳套防燃，安全系数高。波浪棉层的厚度可以是 20mm。

[0047] 其中，3D 网布层由 3D 网布制成，3D 网布是俗称特厚三明治网眼布，是一种透气性，弹性，支撑性都很出色的新型纯织物材料。包含该 3D 网布层的壳套大大提高了床垫的舒适度，使床垫具有以下优点：(1) 既能保护皮肤不受液体和微粒的污染，又能使皮肤透气；(2) 有效防止细菌和真菌的感染；(3) 质地轻，洗涤消毒方便，抗静电；(4) 回弹性好，提供缓冲保护，易洗快干；(5) 化学整理剂和燃料用量少，无污染，着火点低；(6) 湿热舒适性佳；(7) 良好的机械性能和化学稳定性；(8) 环保无毒，防潮防霉，可以回收再用。

[0048] 第二海绵层起到防震、抗干扰、保暖的作用，并能增加舒适度。第二海绵层的厚度可以是 10mmm。

[0049] 洗水棉层洗水棉层是由洗水棉制成，洗水棉是可以用水洗的棉。洗水棉是以棉布为原料，经过特别处理后使织物表面色调、光泽更加柔和，手感更加柔软。包含洗水棉层的壳套，厚度均匀、拉力好，耐水洗，不易烂散成团。

[0050] 其中，针刺棉是不经过纺织，直接将纤维用针刺成絮片的一种产品。本实用新型中的蚕丝针刺棉层采用蚕丝针刺棉制成，蚕丝针刺棉层具有绝缘、伸展性好、抗脆化、耐酸、耐

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碱、耐湿等优良性能。

[0051] 第一针织布层采用针织布制成，具有质地柔软、吸湿透气、排汗保暖、弹性与延伸性良好的优点。

[0052] 进一步地，所述壳套底 22 为阻燃面料。由阻燃面料制成的该壳套底 22 能够阻热阻燃，防止床垫燃烧，提高使用安全性。

[0053] 进一步地，所述围子 23 包括由内向外依次层叠的第二无纺布层、第三海绵层、无胶棉层和第二针织布层。

[0054] 第二无纺布层由无纺布制成，第二无纺布层具有防潮、透气、柔韧、质轻、不助燃、容易分解、无毒无刺激性、色彩丰富、价格低廉、可循环再用等优点。

[0055] 第三海绵层起到防震、抗干扰、保暖的作用，并能增加舒适度。第三海绵层的厚度可以是 7mm。

[0056] 无胶棉层由无胶棉制成，无胶棉非常松软，强度好，耐洗，对人体无刺激，并且具有弹性好，柔软、滑爽、保暖性好、环保的优点。

[0057] 第二针织布层采用针织布制成，具有质地柔软、吸湿透气、排汗保暖、弹性与延伸性良好的优点。

[0058] 海绵的密度越高，说明里面的空隙越小，质量也就越大。例如：40 密度是指一个立方米海绵的重量是 40 公斤，50 密度的就是 50KG 每立方米。在本实用新型的床垫中，第一海绵层比第二海绵层和第三海绵层硬，第一海绵层主要起到支撑加固的作用，第二海绵层和第三海绵层主要起到增加床垫舒适度的作用。具体地，第一海绵层的密度可以是 40，第二海绵层和第三海绵层的密度可以是 20。

[0059] 本实用新型提供的床垫可以做成单人床垫，也可以是双人床垫。做成双人床垫时，床垫的整体尺寸为：长 2000mm，宽 1800mm，厚 400mm。

[0060] 本实用新型提供的床垫，通过各种精制材料制作的层状结构，大大增加床垫带来的舒适感，对人体具有保健作用，易于推广使用。

[0061] 最后应说明的是：以上各实施例仅用以说明本实用新型的技术方案，而非对其限制；尽管参照前述各实施例对本实用新型进行了 详细的说明，本领域的普通技术人员应当理解：其依然可以对前述各实施例所记载的技术方案进行修改，或者对其中部分或者全部技术特征进行等同替换；而这些修改或者替换，并不使相应技术方案的本质脱离本实用新型各实施例技术方案的范围。

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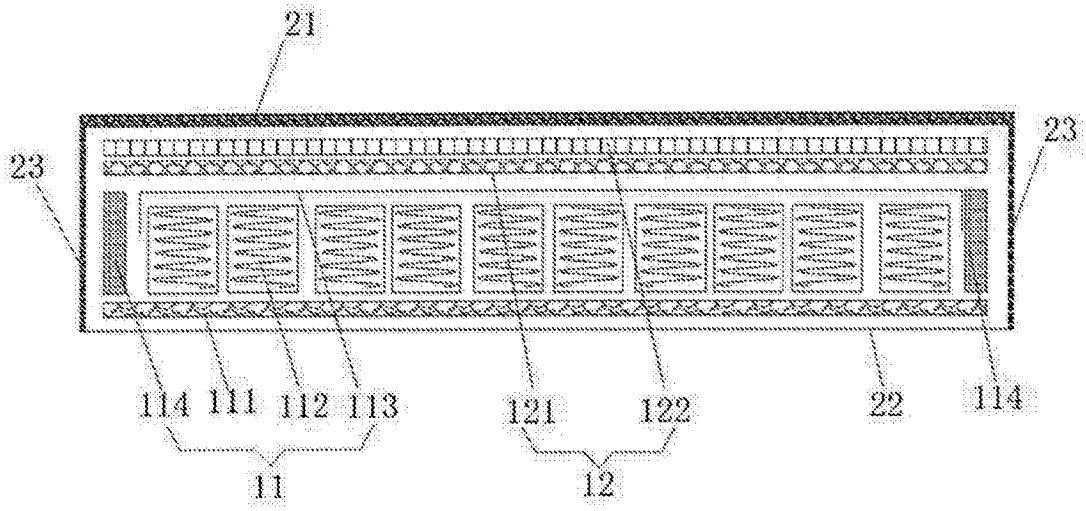


图 1

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Espacenet

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Spring mattress in integral spring in bags

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Classification: - international: *A47C27/06*
- cooperative:

Application number: CN201621243958U 20161115

Priority number (s): CN201621243958U 20161115

Abstract of CN206565654 (U)

The utility model discloses a spring mattress in integral spring in bags, including the spring shield body, be equipped with a plurality of spring unit in the spring shield body, spring unit evenly lays in whole in the spring shield body, spring unit includes spring in a plurality of springs in bags, the spring spring includes inner bag feeding spring body group and plays spring body group outward in bags in the spring in bags, inner bag feeding spring body stack is located play in bags outward in the spring body group, the utility model discloses a spring mattress in the spring in bags arranged of whole evenly distributed, can make human couching in the mattress optional position can both obtain pertinent support to it is soft to make human body and mattress contact laminate more, has improved user's sleep quality.

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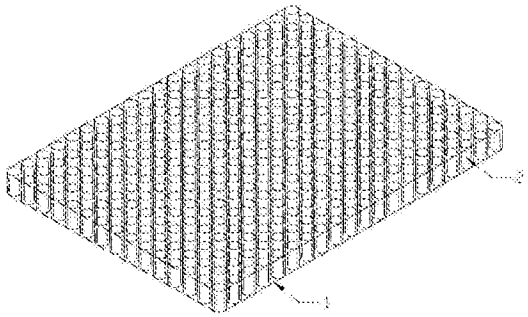
权利要求书1页 说明书4页 附图3页

(54)实用新型名称

一种整体式袋装簧中簧床垫

(57)摘要

本实用新型公开了一种整体式袋装簧中簧床垫，包括弹簧罩体，所述弹簧罩体中设有多个弹簧组件，所述弹簧组件均匀布设于整个所述弹簧罩体中，所述弹簧组件包括多个袋装簧中簧弹簧；所述袋装簧中簧弹簧包括内袋装弹簧体组和外袋装弹簧体组，所述内袋装弹簧体组套设于所述外袋装弹簧体组中，本实用新型采用了整体均匀分布排列的袋装簧中簧床垫，可使人体在床垫任意位置躺卧都能得到恰当的支撑，从而使得人体与床垫接触更加贴合柔软，提高了使用者的睡眠质量。



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1.一种整体式袋装簧中簧床垫，其特征在于：包括弹簧罩体，所述弹簧罩体中设有多个弹簧组件，所述弹簧组件均匀布设于整个所述弹簧罩体中，所述弹簧组件包括多个袋装簧中簧弹簧；所述袋装簧中簧弹簧包括内袋装弹簧体组和外袋装弹簧体组，所述内袋装弹簧体组套设于所述外袋装弹簧体组中。

2.如权利要求1所述的整体式袋装簧中簧床垫，其特征在于：所述弹簧组件包括五个袋装簧中簧弹簧，其中，中心部位的袋装簧中簧弹簧的四周相切设置有其余四个袋装簧中簧弹簧；所述弹簧组件通过四周的四个袋装簧中簧弹簧中的任意两个与邻近的所述弹簧组件两两相切连接。

3.如权利要求1所述的整体式袋装簧中簧床垫，其特征在于：所述弹簧组件包括四个均匀设置的袋装簧中簧弹簧；所述弹簧组件通过四个袋装簧中簧弹簧中的任意两个与邻近的所述弹簧组件两两相切连接。

4.如权利要求1所述的整体式袋装簧中簧床垫，其特征在于：该袋装簧中簧弹簧相互之间通过超声波焊接或人工缝制在所述外袋装弹簧体组上形成与所述弹簧罩体连接的连接层。

5.如权利要求1-4任一项所述的整体式袋装簧中簧床垫，其特征在于：所述外袋装弹簧体组包括第一布袋和第一弹簧体，所述内袋装弹簧体组包括第二布袋和第二弹簧体，所述第二弹簧体高度低于所述第一弹簧体。

6.如权利要求5所述的整体式袋装簧中簧床垫，其特征在于：所述第一布袋材料为无纺布或棉布。

7.如权利要求5所述的整体式袋装簧中簧床垫，其特征在于：所述第一弹簧体和所述第二弹簧体的线径范围为1.5-2.0mm。

8.如权利要求7所述的整体式袋装簧中簧床垫，其特征在于：所述第一弹簧体的原始高度范围为20-25cm，所述第二弹簧体的原始高度范围为15-19cm。

9.如权利要求8所述的整体式袋装簧中簧床垫，其特征在于：所述第一弹簧体的芯径范围为60-70mm，所述第二弹簧体芯径范围为50-60mm。

10.如权利要求9所述的整体式袋装簧中簧床垫，其特征在于：所述第一弹簧体的线径为1.6mm，芯径为67mm，原始高度为21cm；所述第二弹簧体的线径为1.8mm，芯径为53mm，原始高度为17cm。

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一种整体式袋装簧中簧床垫

技术领域

[0001] 本实用新型提出一种床垫，特别是涉及一种整体式袋装簧中簧床垫。

背景技术

[0002] 现有的高品质弹簧床垫一般为袋装独立弹簧床垫，或间隔分布排列的簧中簧床垫，袋装独立弹簧床垫表面各处支撑力度相等，不能对人体各部位的不同压力提供相对应的支撑，而间隔排列的簧中簧床垫，虽然能提供不同的支撑力，但当人体躺卧在床垫不同位置时，因其簧中簧是间隔分布，不能准确识别人体各部位需要的不同支撑力，身体与床垫的接触不够贴合柔软，从而无法提升优质的睡眠。

[0003] 以上背景技术内容的公开仅用于辅助理解本实用新型的构思及技术方案，其并不必然属于本专利申请的现有技术，在没有明确的证据表明上述内容在本专利申请的申请日已经公开的情况下，上述背景技术不应当用于评价本申请的新颖性和创造性。

实用新型内容

[0004] 本实用新型目的在于提出一种整体式袋装簧中簧床垫，以解决上述现有技术存在的床垫支撑不良的技术问题。

[0005] 为此，本实用新型提出一种整体式袋装簧中簧床垫，包括弹簧罩体，所述弹簧罩体中设有多个弹簧组件，所述弹簧组件均匀布设于整个所述弹簧罩体中，所述弹簧组件包括多个袋装簧中簧弹簧；所述袋装簧中簧弹簧包括内袋装弹簧体组和外袋装弹簧体组，所述内袋装弹簧体组套设于所述外袋装弹簧体组中。

[0006] 优选地，本实用新型还可以具有如下技术特征：

[0007] 所述弹簧组件包括五个袋装簧中簧弹簧，其中，中心部位的袋装簧中簧弹簧的四周相切设置有其余四个袋装簧中簧弹簧；所述弹簧组件通过四周的四个袋装簧中簧弹簧中的任意两个与邻近的所述弹簧组件两两相切连接。

[0008] 所述弹簧组件包括四个均匀设置的袋装簧中簧弹簧；所述弹簧组件通过四个袋装簧中簧弹簧中的任意两个与邻近的所述弹簧组件两两相切连接。

[0009] 该袋装簧中簧弹簧相互之间通过超声波焊接或人工缝制在所述外袋装弹簧体组上形成连接层。

[0010] 所述外袋装弹簧体组包括第一布袋和第一弹簧体，所述内袋装弹簧体组包括第二布袋和第二弹簧体，所述第二弹簧体高度低于所述第一弹簧体。

[0011] 所述第一布袋材料为无纺布或棉布。

[0012] 所述第一弹簧体和所述第二弹簧体的线径范围为1.5-2.0mm。

[0013] 所述第一弹簧体的原始高度范围为20-25cm，所述第二弹簧体的原始高度范围为15-19cm。

[0014] 所述第一弹簧体的芯径范围为60-70mm，所述第二弹簧体芯径范围为50-60mm。

[0015] 所述第一弹簧体的线径为1.6mm，芯径为67mm，原始高度为21cm；所述第二弹簧体

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的线径为1.8mm，芯径为53mm，原始高度为17cm。

[0016] 本实用新型与现有技术对比的有益效果包括：

[0017] 本实用新型采用了整体均匀分布排列的袋装簧中簧床垫，可使人体在床垫任意位置躺卧都能得到恰当的支撑，从而使得人体与床垫接触更加贴合柔软，提高了使用者的睡眠质量。其中，袋装簧中簧弹簧的设置能够提供不同的支撑力，相比于现有的独立袋装弹簧而言，袋装簧中簧弹簧包括内袋装弹簧体组和外袋装弹簧体组，通过在外袋装弹簧体组中再套装一个内袋装弹簧体组，可以提供不同的支撑力，这样可以很好地针对人体的各个部位的不同压力给予准确的支撑。

[0018] 优选方案中，本实用新型的弹簧组件包括有五个袋装簧中簧弹簧，这五个袋装簧中包括一个设置在中间的袋装簧中簧弹簧，在这个中心的簧中簧的四周均匀设置有其他的四个袋装簧中簧弹簧，通过这四个袋装簧中簧弹簧，实现邻近的两个弹簧组件的连接，由此依次排满整个弹簧罩体，采用这样设置的弹簧组件对弹簧罩体进行排列，相比于普通的横直竖排的方式而言，可以在保证均匀布置，提供均衡的受力的同时，以较少的袋装簧中簧弹簧布满一个较大的面积，减少了袋装簧中簧弹簧的使用个数，减低了制造成本。

[0019] 当然，还可采用根据实际情况在弹簧组件中设置更为紧凑的袋装簧中簧弹簧，以提供更为均衡的支撑。

附图说明

[0020] 图1是本实用新型具体实施方式一和二的床垫示意图。

[0021] 图2是本实用新型具体实施方式一和二的袋装簧中簧弹簧的示意图。

[0022] 图3是本实用新型具体实施方式一的弹簧组件的示意图。

[0023] 图4是本实用新型具体实施方式二的弹簧组件的示意图。

[0024] 1-弹簧罩体，2-袋装簧中簧弹簧，3-弹簧组件。

[0025] 211-第一布袋，212-第一弹簧体，221-第二布袋，222-第二弹簧体。

具体实施方式

[0026] 下面结合具体实施方式并对照附图对本实用新型作进一步详细说明。应该强调的是，下述说明仅仅是示例性的，而不是为了限制本实用新型的范围及其应用。

[0027] 参照以下附图1-4，将描述非限制性和非排他性的实施例，其中相同的附图标记表示相同的部件，除非另外特别说明。

[0028] 实施例一：

[0029] 本实施例提出了一种整体式袋装簧中簧床垫，如图1所示，包括弹簧罩体1，所述弹簧罩体1中设有多个弹簧组件3，所述弹簧组件3均匀布设于整个所述弹簧罩体1中，如图3所示，所述弹簧组件3包括多个袋装簧中簧弹簧2；所述袋装簧中簧弹簧2包括内袋装弹簧体组和外袋装弹簧体组，所述内袋装弹簧体组套设于所述外袋装弹簧体组中。

[0030] 本实施例中，对于“簧中簧”结构，这是一种弹簧中套弹簧的技术，在外部鼓形弹簧里面还有一个独立的内置弹簧，可以针对受力大小提供独立、有力的回弹支撑。“簧中簧”弹簧系统可以识别身体独立部位的不同压力提供反作用力，这样不同体型和体重的人都可以获得最大的放松，翻身的时候也不用担心会影响到睡伴。

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[0031] 本实施例中，如图3所示，所述弹簧组件3包括四个均匀设置的袋装簧中簧弹簧2；所述弹簧组件3通过四个袋装簧中簧弹簧2中的任意两个与邻近的所述弹簧组件3两两相切连接，这种弹簧组件3的设置更为紧凑，可以提供更为均衡的支撑。

[0032] 本实施例中，如图2所示，所述外袋装弹簧体组包括第一布袋211和第一弹簧体212，所述内袋装弹簧体组包括第二布袋221和第二弹簧体222，所述第二弹簧体222高度低于所述第一弹簧体212；其中，所述第一弹簧体212的线径为1.6mm，芯径为67mm，原始高度为21cm；所述第二弹簧体222的线径为1.8mm，芯径为53mm，原始高度为17cm。

[0033] 本实施例中，所述第一布袋211材料为无纺布，该袋装簧中簧弹簧2相互之间通过超声波焊接在所述外袋装弹簧体组上形成与弹簧罩体1连接的连接层，采用无纺布，成本较低，质地柔软，环保；连接层通过超声波焊接融合，生产效率高，生产成本较低。

[0034] 本实施例中，“簧中簧”结构能识别以及反作用于每个独立部位的身体运动，形成不同的支撑力度，建立“自己的睡姿”系统。

[0035] 本实施例中，袋装簧中簧弹簧2是将每一个独立个体弹簧施压后装填入袋，再加以连接排列而成，可以每个弹簧都可以独立动作，独立支撑，能单独伸缩。因此，当二人同时躺在床垫上时，一个人转动身体，而另一个则不会受到干扰。这对于那些夫妻双方体重相差较大的就特别适合。

[0036] 通过包括多个袋装簧中簧弹簧2的弹簧组件3对弹簧罩体1进行填装，避免了独立弹簧床垫不能对人体各部位的不同压力提供相对应的支撑，或间隔分布排列的簧中簧床垫不能准确识别人体各部位需要的不同支撑力的问题。

[0037] 实施例二：

[0038] 本实施例提出了一种整体式袋装簧中簧床垫，如图1所示，包括弹簧罩体1，所述弹簧罩体1中设有多个弹簧组件3，所述弹簧组件3均匀布设于整个所述弹簧罩体1中，如图4所示，所述弹簧组件3包括多个袋装簧中簧弹簧2；所述袋装簧中簧弹簧2包括内袋装弹簧体组和外袋装弹簧体组，所述内袋装弹簧体组套设于所述外袋装弹簧体组中。

[0039] 本实施例中，对于“簧中簧”结构，这是一种弹簧中套弹簧的技术，在外部鼓形弹簧里面还有一个独立的内置弹簧，可以针对受力大小提供独立、有力的回弹支撑。“簧中簧”弹簧系统可以识别身体独立部位的不同压力提供反作用力，这样不同体型和体重的人都可以获得最大的放松，翻身的时候也不用担心会影响到睡伴。

[0040] 本实施例中，如图4所示，所述弹簧组件3包括五个袋装簧中簧弹簧2，其中，中心部位的袋装簧中簧弹簧2的四周相切设置有其余四个袋装簧中簧弹簧2；所述弹簧组件3通过四周的四个袋装簧中簧弹簧2中的任意两个与邻近的所述弹簧组件3两两相切连接。

[0041] 本实施例中，如图2所示，所述外袋装弹簧体组包括第一布袋211和第一弹簧体212，所述内袋装弹簧体组包括第二布袋221和第二弹簧体222，所述第二弹簧体222高度低于所述第一弹簧体212；其中，所述第一弹簧体212的线径为1.5mm，芯径为70mm，原始高度为20cm；所述第二弹簧体222的线径为2.0mm，芯径为60mm，原始高度为15cm。或者，所述第一弹簧体212的线径为1.5mm，芯径为70mm，原始高度为25cm；所述第二弹簧体222的线径为2.0mm，芯径为60mm，原始高度为19cm。

[0042] 本实施例中，所述第一布袋211材料为无纺布，该袋装簧中簧弹簧2相互之间通过超声波焊接在所述外袋装弹簧体组上形成与弹簧罩体1连接的连接层，采用无纺布，成本较

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低，质地柔软，环保；连接层通过超声波焊接融合，生产效率高，生产成本较低。

[0043] 本实施例采用了整体均匀分布排列的袋装簧中簧床垫，可使人体在床垫任意位置躺卧都能得到恰当的支撑，从而使得人体与床垫接触更加贴合柔软，提高了使用者的睡眠质量。其中，袋装簧中簧弹簧2的设置能够提供不同的支撑力，相比于现有的独立袋装弹簧而言，袋装簧中簧弹簧2包括内袋装弹簧体组和外袋装弹簧体组，通过在外袋装弹簧体组中再套装一个内袋装弹簧体组，可以提供不同的支撑力，这样可以很好地针对人体的各个部位的不同压力给予准确的支撑。

[0044] 本实施例中的弹簧组件3包括有五个袋装簧中簧弹簧2，这五个袋装簧中包括一个设置在中间的袋装簧中簧弹簧2，在这个中心的簧中簧的四周均匀设置有其他的四个袋装簧中簧弹簧2，通过这四个袋装簧中簧弹簧2，实现邻近的两个弹簧组件3的连接，由此依次排满整个弹簧罩体1，采用这样设置的弹簧组件3对弹簧罩体1进行排列，相比于普通的横直竖排的方式而言，可以在保证均匀布置，提供均衡的受力的同时，以较少的袋装簧中簧弹簧2布满一个较大的面积，减少了袋装簧中簧弹簧2的使用个数，减低了制造成本。

[0045] 本领域技术人员将认识到，对以上描述做出众多变通是可能的，所以实施例和附图仅是用来描述一个或多个特定实施方式。

[0046] 尽管已经描述和叙述了被看作本实用新型的示范实施例，本领域技术人员将会明白，可以对其作出各种改变和替换，而不会脱离本实用新型的精神。另外，可以做出许多修改以将特定情况适配到本实用新型的教义，而不会脱离在此描述的本实用新型中心概念。所以，本实用新型不受限于在此披露的特定实施例，但本实用新型可能还包括属于本实用新型范围的所有实施例及其等同物。

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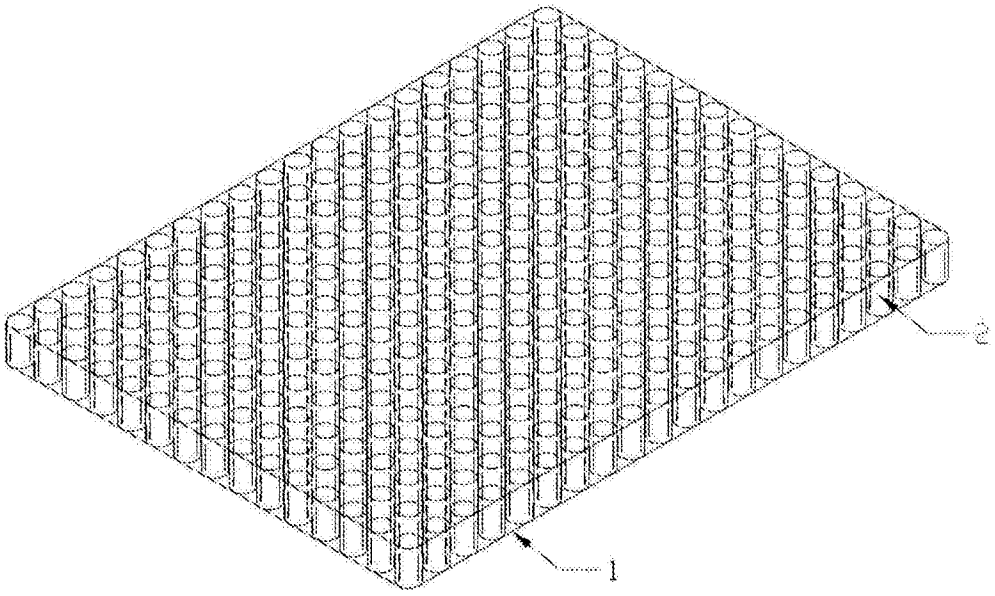


图1

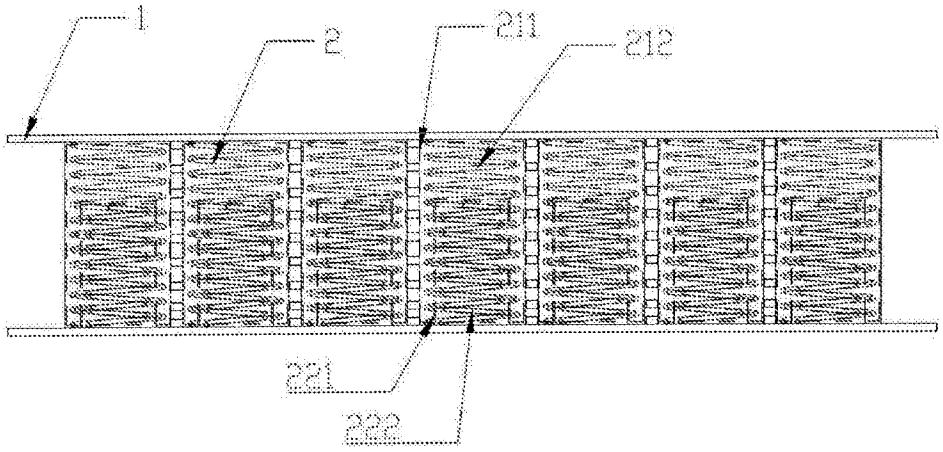


图2

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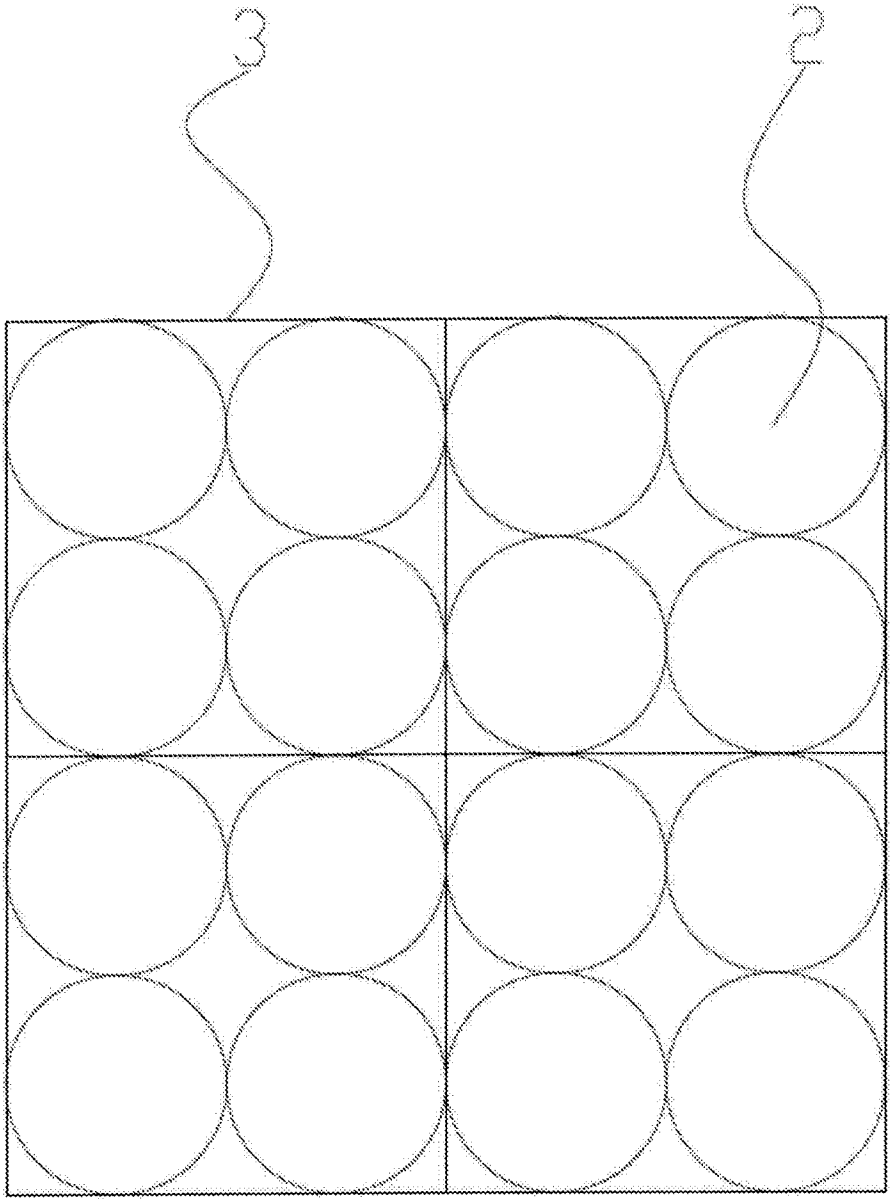


图3

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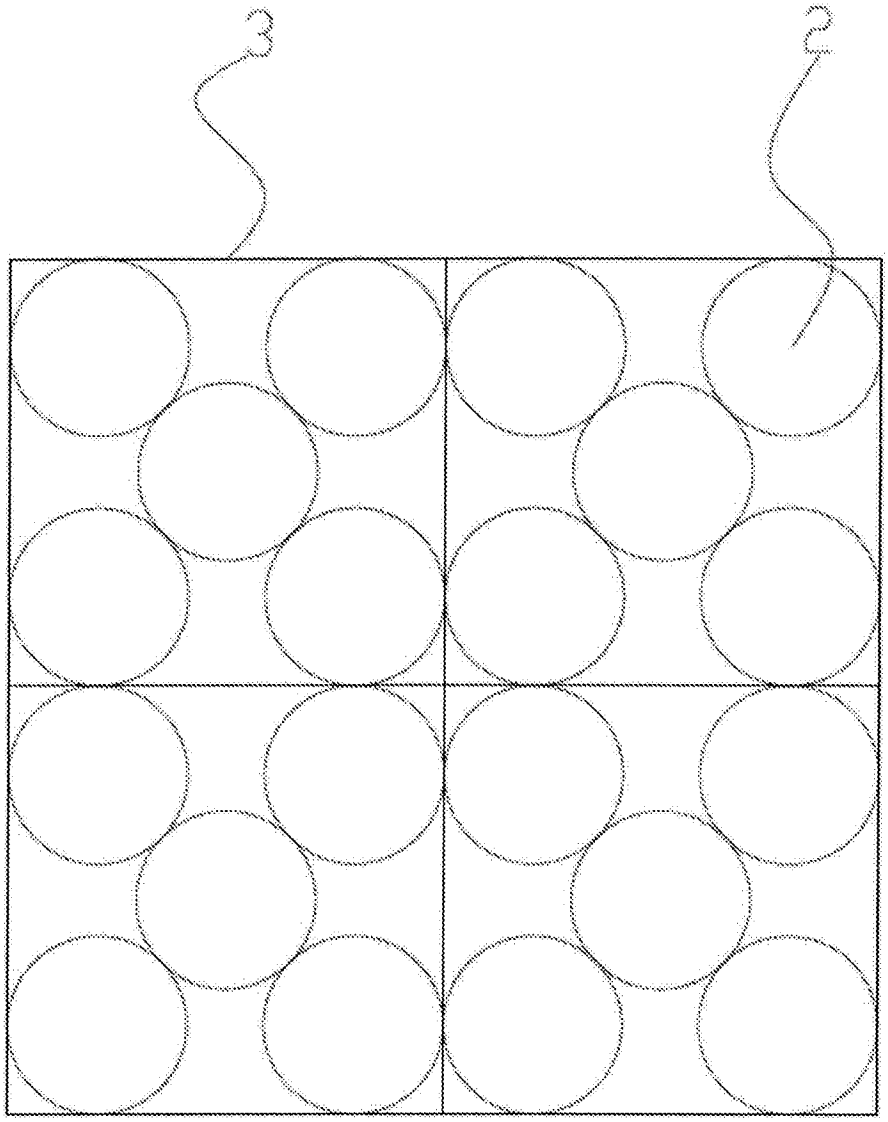


图4

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Espacenet

Bibliographic data: CN2272697 (Y) — 1998-01-21

Bagged independent spring mattress

Inventor(s): CUI GUOTANG [CN] ± (GUOTANG CUI)

Applicant(s): JINBAOMA FURNITURE MANUFACTURI [CN] ± (JINBAOMA FURNITURE MANUFACTURING CO., LTD., SHUNDE)

Classification: **- international:** ***A47C23/00;*** (IPC1-7): A47C23/00
- cooperative:

Application number: CN19962037801U 19961125

Priority number (s): CN19962037801U 19961125

Abstract of CN2272697 (Y)

The utility model relates to a bagged independent spring mattress. The utility model is characterized in that bag covers in the same longitudinal row are connected mutually into integration, the utility model is provided with a middle frame besides a top frame and a bottom frame, a plurality of positioning reinforcing rods pass through a mattress core transversely and are stretched straight, and the both ends of the positioning reinforcing rods are fixed on the both longitudinal sides of the middle frame. Springs of the mattress not only have better positioning firmness, but also have better independence. When the mattress is used, the mattress can be matched with a person's natural body shape, and a person can not affect other person's peaceful sleep when turning over and swinging. Meanwhile, the side frames of the mattress are provided with stronger bearing force, the collapse and the deformation of the mattress can be ensured not to occur, and the utility model has the advantage of high durability.

[19]中华人民共和国专利局

[51]Int.Cl[6]
A47C 23/00

[12] 实用新型专利说明书

[21] ZL 专利号 96237801.1

[45]授权公告日 1998 年 1 月 21 日

[11] 授权公告号 CN 2272697Y

[22]申请日 96.11.25 [24]颁证日 97.12.19

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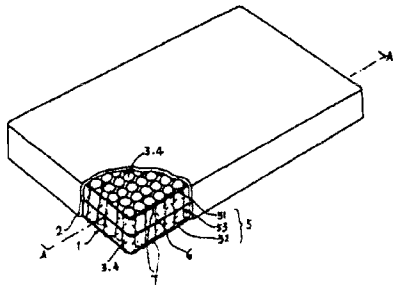
[21]申请号 96237801.1
[74]专利代理机构 中山大学专利事务所
代理人 林灿志 吴碧芳

权利要求书 1 页 说明书 3 页 附图页数 2 页

[54]实用新型名称 袋装独立弹簧床垫

[57]摘要

本实用新型涉及一种袋装独立弹簧床垫，其特征是纵向同一行的袋套互相连成一体，边框部分除了上下边框外，还有一中边框，有若干定位加强筋横向穿过垫芯，绷直并两端连结固定在中边框的两纵边上。本床垫的弹簧既有较好的定位稳固性，又有较好的独立性，使用时能与人的自然体形相吻合，一人的翻身摆动也不会影响旁人的安睡；同时，本床垫有边框具有较强的承托力，能保证床垫不会塌陷变形，经久耐用。



权　利　要　求　书

1、一种袋装独立弹簧床垫，由垫芯（1）与包覆层（2）构成，垫芯（1）由弹簧（3）、袋套（4）和边框（5）构成，每个弹簧（3）独立装于袋套（4）中，位于垫芯边缘的弹簧的两端分别与上、下边框（51、52）连结固定；其特征是纵向同一行的袋套互相连成一体；边框（5）除了上边框（51）和下边框（52）外，还有一中边框（53），有若干定位加强筋（6）横向穿过垫芯（1），绷直并两端连结固定在中边框（53）的两纵边上。

2、按照权利要求1所述的床垫，其特征是垫芯（1）中相邻纵行间的弹簧（3）呈交错排列。

3、按照权利要求1或2所述的床垫，其特征是垫芯（1）两侧边缘以及纵向中间1/4～1/2部分（M）的弹簧的线径比其余部分（N）的弹簧的线径略粗。

4、按照权利要求1或2所述的床垫，其特征是所用的弹簧（3）的外形呈类似桶状体形。

5、按照权利要求3所述的床垫，其特征是所用的弹簧（3）的外形呈类似桶状体形。

说　　明　　书

袋装独立弹簧床垫

本实用新型涉及一种弹簧床垫，特别是各个弹簧独立装于袋套中的袋装独立弹簧床垫。

现有的弹簧床垫的垫芯中的各个弹簧的两端是分别互相连结的，从而在垫芯的上下两面构成固定的网状，同时起到固定各个弹簧的作用。由于这种床垫各弹簧之间是互相连结的，所以当某一位置的弹簧受压缩时，必然牵动附近其它弹簧，造成人睡在床垫上时，其弹簧的受压缩状态不能与人的自然体形相吻合，长久使用会对人的体形产生不良影响；另外，也造成了两人同睡时，一人翻身动作即会使床垫的相邻部位波动而影响另一人的安睡。为了解决上述问题，有人设计了一种袋装弹簧床垫，其垫芯中的各个弹簧独立装于布质袋套中，各个袋套再互相连结成一体。但这种床垫也未能完全解决上述床垫所存在的问题，因为其袋套全部连结成一体，当一处弹簧受压缩时，必然会通过袋套牵动其它弹簧，只是其牵动的程度比上述一般弹簧床垫小一些而已。另外，这种床垫还由于其垫芯只是依靠上下边框和袋套来承托和固定弹簧，造成承托力不够，弹簧也不够稳固，所以使用过程中弹簧的位置容易移动，以及搬动时床垫中间部分容易向下塌陷，而使床垫变形，影响使用效果，并会缩短床垫的使用寿命。

本实用新型的目的是对现有的袋装弹簧床垫作出改进，提高其弹簧的独立性和定位稳固性，从而克服上述床垫所存在的问题。

本实用新型的床垫由垫芯与包覆层构成，垫芯由弹簧、袋套和边框构成。每个弹簧独立装于袋套中，位于垫芯边缘的弹簧的两端分别与上、下边框连结固定。本实用新型的特征是：纵向同一行的袋套互相连成一体，边框部分除了上边框和下边框外，还有一中边框，有若干定位加强筋横向穿过垫芯，绷直并两端连结固定在中边框的两纵边上。

本实用新型的床垫由于垫芯纵向同一行的袋套连成一体，而纵行与纵行之间的袋套则不互相连结，既能使弹簧较好地定位，又保证了其独立性；当某一行上的弹簧受压缩时，其它行的弹簧不易受牵动。所以，使用本床垫时，其弹簧的受压缩状

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态能与人的自然体形相吻合，不会对人的体形产生不良影响；另外，当两人同睡时，一人翻身或摆动也不会使相邻部位的床垫波动，不会影响另一人的安睡；因此，本床垫能提供最佳的睡眠效果。同时，由于本床垫的边框中增加了中边框，并且增设了横穿垫芯的定位加强筋，从而增加了弹簧的定位稳固性以及边框的承托力，保证床垫中间部分不会塌陷，弹簧不会移位，使床垫不变形，经久耐用。

为了使本实用新型的床垫具有更大而且更均匀的承托力，可使垫芯中相邻纵行间的弹簧呈交错排列，从而增加弹簧的密度。

还可使垫芯的两侧边缘以及纵向中间占整个垫芯约1/4至1/2部分的弹簧的线径比其余部分的弹簧的线径略粗。这样可使经常受力较大的床垫纵向中间部分以及两侧边缘部分的支承力得到提高，从而可进一步防止一般床垫容易出现的中央部塌陷和侧边崩塌现象，使床垫更加经久耐用，而且使用更加舒适。

以下结合附图对本实用新型作进一步说明。

图1是本实用新型一种实施例的整体结构示意图；

图2是图1的A－A剖面图；

图3是图2的B－B剖面图；

图4是粗、细两种线径的弹簧分布区域示意图；

图5是所用弹簧的外形示意图。

参照图1至图5。本床垫由垫芯1和包覆层2构成；该包覆层与已有一般的弹簧床垫相同；该垫芯由独立装于袋套4中的弹簧3和边框5构成。袋套4可采用化纤无纺布或各种纤维纺织布做成；位于纵向同一行的袋套互相连成一体（如图2所示；图中9为袋套间的连结线）；相邻纵行间的弹簧呈交错排列（如图1所示）。边框5不仅有上边框51和下边框52，还在上下边框之间增加了中边框53，从而使本床垫四周侧边具有较高的强度和支承力；位于垫芯周边紧靠边框的弹簧的两端分别与上下边框连结固定（如图1中的7所示），有若干定位加强筋6横向穿过垫芯，绷直并两端连结在中边框53的两纵边上（如图3所示），该定位加强筋可采用尼龙绳、麻绳、金属线等，其数量最好是从垫芯纵向侧边两端第一与第二个弹簧之间起，每隔两个弹簧有一条定位加强筋（如图2所示），这样既可使每个弹簧都受到定位加强筋的加强固定作用，又不需用太多的定位加强筋；当然，完全可依据具体设计需要使用比这更多或更少的定位加强筋。

图4中的L为垫芯的纵向长度，a和c分别为纵向中间和两侧边缘采用较粗线

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径弹簧的部分的长度，b为两端采用较细线径弹簧的其余部分的长度；通常情况下，a＝（L/4）～（L/2），b＝(L-a）／2，c为一至二个弹簧的直径长度。本实施例床垫的垫芯纵向中间1／3部分以及两侧边缘（各占两纵行弹簧）部分，即图4中所示有斜线的部分M，使用线径为2.0mm的弹簧；其余部分，即图4中所示无斜线的部分N，则使用线径为1.9mm的弹簧。

如图5所示，本床垫所用的弹簧3的外形为类似桶状体形。由于桶状体形从中间到两端直径渐小，而床垫在使用过程中弹簧受压缩时可看作是两端向中间压缩，所以桶状体形弹簧在受压缩过程中可避免或减少相邻弹簧间的碰撞和牵拉，从而可保证弹簧的独立性，并可避免因弹簧间的碰撞而产生的声响。

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说 明 书 附 图

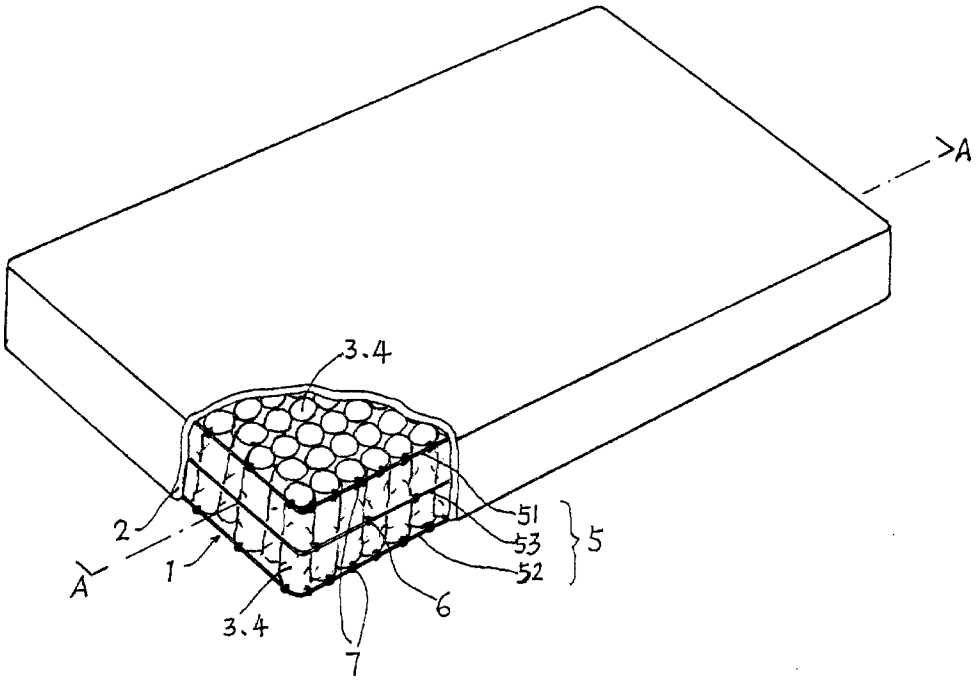
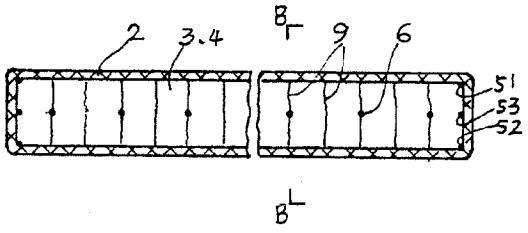
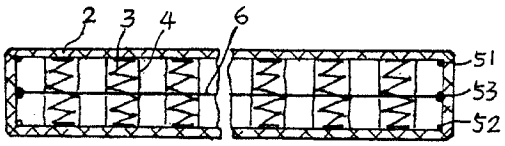


图 1



A—A

图 2



B—B

图 3

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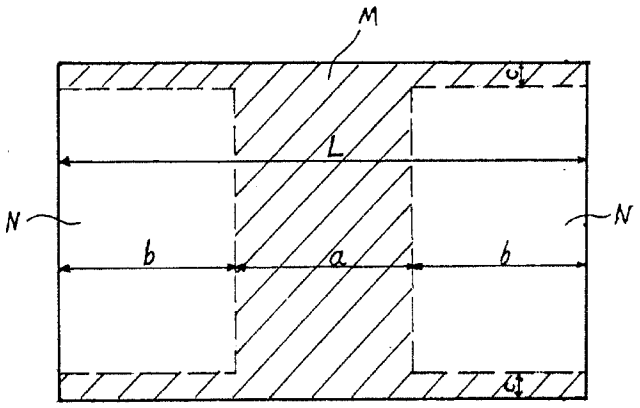


图 4

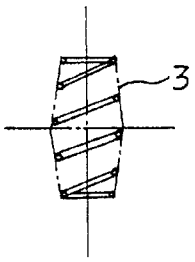


图 5

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Electronic Patent Application Fee Transmittal

Application Number:	15816983
Filing Date:	17-Nov-2017
Title of Invention:	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
First Named Inventor/Applicant Name:	Tony M. Pearce
Filer:	Brick Glenn Power/stacia pentz-boren
Attorney Docket Number:	54023-3030US01

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
RCE- 1ST REQUEST	1801	1	1360	1360
		Total in USD ($)		**1360**

Electronic Acknowledgement Receipt

EFS ID:	40798126
Application Number:	15816983
International Application Number:	
Confirmation Number:	9411
Title of Invention:	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
First Named Inventor/Applicant Name:	Tony M. Pearce
Customer Number:	128128
Filer:	Brick Glenn Power/stacia pentz-boren
Filer Authorized By:	Brick Glenn Power
Attorney Docket Number:	54023-3030US01
Receipt Date:	08-OCT-2020
Filing Date:	17-NOV-2017
Time Stamp:	17:40:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1360
RAM confirmation Number	E202008H40317340
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	2020-10-08-sb0030efs-RCE-54023-3030US01.PDF	1349999 73a4e64491ce5b4d76b472cafb2563e7df26e790	no	3
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	2020-10-08-sb0008a-IDS-54023-3030US01.PDF	1035015 7a73da9abdc83bfbe9eb6d675f165005e3003c68	no	4
Warnings:					
Information:					
3	Foreign Reference	CN101568281A.PDF	3201162 9d68c32f35afd5ffc806213a50952c929724f137	no	33
Warnings:					
Information:					
4	Foreign Reference	CN105747678A.PDF	695120 0003af3dcc0881f338a63438f03f85eae7212257	no	7
Warnings:					
Information:					
5	Foreign Reference	CN204734212U.PDF	1316940 b078a6eda43124500ded01d1ca2d1c18c084cc9d	no	9
Warnings:					
Information:					
6	Foreign Reference	CN205321883U.PDF	1050550 b8e3dd7adb5e2f3c2b35675b3c2c6d809a7beb43	no	8
Warnings:					
Information:					

7	Foreign Reference	CN204838771U.PDF	1434663 99f779275c61a25bc575bec42054dfa36dc0f8c2	no	9
Warnings:					
Information:					
8	Foreign Reference	CN206565654U.PDF	1420352 5d41edd398a0af42d9627c759100b79e07400e0e	no	10
Warnings:					
Information:					
9	Foreign Reference	CN2272697Y.PDF	689523 6b6c5637cb14631ea770dfef501230f2151316a2	no	8
Warnings:					
Information:					
10	Non Patent Literature	CN-OA.PDF	961770 3ec66838fcd24296bd6e2645813bc4eb9ad2b189	no	13
Warnings:					
Information:					
11	Fee Worksheet (SB06)	fee-info.pdf	30915 6709b7be091bd80d66cb60b305bb0a81fddf2ecd	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	13186009	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	15/816,983	Filing Date	2017-11-17	Docket Number (if applicable)	54023-3030US01	Art Unit	3673
First Named Inventor	Tony M. Pearce			Examiner Name	McClure, Morgan J.		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☒ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

☒ Other Amendment Under 37 C.F.R. 1.116 filed September 10, 2020

☒ Enclosed

☐ Amendment/Reply

☒ Information Disclosure Statement (IDS)

☐ Affidavit(s)/ Declaration(s)

☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 505205

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

X Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/brick g power/	Date (YYYY-MM-DD)	2020-10-08
Name	Brick G. Power	Registration Number	38581

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/816,983	11/17/2017	Tony M. Pearce	54023-3030US01	9411

128128 7590 09/29/2020

Durham Jones & Pinegar, P.C.
Intellectual Property Law Group
3301 N. Thanksgiving Way, Suite 400
Lehi, UT 84043

EXAMINER	
MCCLURE, MORGAN J	

ART UNIT	PAPER NUMBER
3673	

NOTIFICATION DATE	DELIVERY MODE
09/29/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

apower@djplaw.com
ipmail@djplaw.com
sboren@djplaw.com

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 15/816,983	**Applicant(s)** Pearce et al.	
	Examiner MORGAN J MCCLURE	**Art Unit** 3673	**AIA (FITF) Status** Yes

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 10 September 2020 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☑ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:
   a) ☐ The period for reply expires ____ months from the mailing date of the final rejection.
   b) ☑ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection.The current period for reply expires ____ months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.
   Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANTS FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37CFR 41.37(a).

AMENDMENTS

3. ☑ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☑ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☑ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.
   NOTE: See Continuation Sheet (See 37CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicants reply has overcome the following rejection(s): _____
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☐ For purposes of appeal, the proposed amendment(s):(a) ☐ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____
9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☑ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.
13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
14. ☐ Other: _____.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:
    Claim(s) allowed:_____.
    Claim(s) objected to:_____.
    Claim(s) rejected:1-20.
    Claim(s) withdrawn from consideration:_____.

/MORGAN J MCCLURE/ Examiner, Art Unit 3673	/NICHOLAS F POLITO/ Primary Examiner, Art Unit 3619

Continuation of 3. NOTE: The amendments and corresponding arguments would require additional time outside of that allotted for after final consideration to be considered.

Continuation of REQUEST FOR RECONSIDERATION/OTHER 12. The request for reconsideration has been considered but does NOT place the application in condition for allowance because: The amendments and corresponding arguments would require additional time outside of that allotted for after final consideration to be considered.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Purple Innovation, LLC

Application No.: 15/816,983

Filed: November 17, 2017

Confirmation No.: 9411

For: MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

Art Unit: 3673

Examiner: McClure, Morgan J.

Attorney Docket No.: 54023-3030US01

VIA EFS
September 10, 2020

AMENDMENT UNDER 37 C.F.R. § 1.116

Commissioner for Patents
United States Patent and Trademark Office
P. O. BOX 1450
Alexandria, VA 22313-1450

Examiner:

This Amendment follows the final Office Action of July 10, 2020.

A listing of the claims, in which proposed revisions to the claims are presented, begins on page 2 of this paper; and

Remarks start at page 6 of this paper.

Doc Code: A.NE.AFCP
Document Description: After Final Consideration Pilot Program Request

PTO/SB/434 (05-13)

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0

Practitioner Docket No.:	Application No.:	Filing Date:
54023-3030US01	15/816,983	2017-11-17

First Named Inventor:	Title:
Tony M. Pearce	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.

1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (*e.g.*, a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c).
2. The above-identified application contains an outstanding final rejection.
3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect.
4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection.
5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response.
6. This certification and request is being filed electronically using the Office's electronic filing system (EFS-Web).
7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.]
8. By filing this certification and request, applicant acknowledges the following:
    - Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0.
    - The examiner will verify that the AFCP 2.0 submission is compliant, *i.e.*, that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions:
        - The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, by mailing an advisory action.
        - If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview.
            - The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate.
            - If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116.

Signature	Date
/brick g power/	2020-09-10
Name (Print/Typed) Brick G. Power	Practitioner Registration No. 38581

***Note**: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.*

[✓] * Total of 1 forms are submitted.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	40521371
Application Number:	15816983
International Application Number:	
Confirmation Number:	9411
Title of Invention:	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
First Named Inventor/Applicant Name:	Tony M. Pearce
Customer Number:	128128
Filer:	Brick Glenn Power/stacia pentz-boren
Filer Authorized By:	Brick Glenn Power
Attorney Docket Number:	54023-3030US01
Receipt Date:	10-SEP-2020
Filing Date:	17-NOV-2017
Time Stamp:	15:21:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2020-09-10-AmendmentUnder37CFR-1-116-54023-3030US01.pdf	522752 0c7b5daeb5aef4a8ca83df9dd539b8ce527e1934	yes	11

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Applicant Arguments/Remarks Made in an Amendment	6	11
	Claims	2	5
	Response After Final Action	1	1

Warnings:					
Information:					
2	After Final Consideration Program Request	2020-09-10-sb0434-AFCP-54023-3030US01.PDF	226803 e2c13d2bfe4729a9a9d644ba5dd61905a173e790	no	2
Warnings:					
Information:					
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

REMARKS

The final Office Action of July 10, 2020 has been received and considered.

Claims 1-20 are currently pending in the above-captioned application. The Office has considered claims 1-20 and has rejected each of these claims.

It is proposed that claims 1, 10, and 16 be revised. The proposed amendments to these claims are made without prejudice or disclaimer.

Reconsideration of the application is respectfully requested.

Rejections under 35 U.S.C. § 103

The Office has rejected claims 1-20 under 35 U.S.C. § 103.

There are several requirements for establishing a *prima facie* case of obviousness against the claims of a patent application. All of the limitations of the claim must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Even when the art teaches or suggests each and every claim element, a claim "is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR Int'l Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007). A mere conclusory statement that one of ordinary skill in the art would have been motivated to combine or modify reference teachings simply will not suffice. *KSR* at 1396. The Office must also establish that one of ordinary skill in the art would have been able to predict that the purported modification or combination of reference teachings would have been successful. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). To meet its burden, the Office must provide "some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR* at 1396, quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). The articulated reasoning must be found in the prior art or common knowledge to those of ordinary skill in the art, or be derived from the nature of the problem itself; it cannot be based upon the Applicant's disclosure or the Examiner's own hindsight analysis. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006).

Kluft in view of Rancourt

Claims 1-5, 9, and 16 have been rejected under 35 U.S.C. § 103 for being drawn to subject matter that is purportedly not patentable over teachings and/or suggestions from U.S. Patent 7,640,611 to Kluft ("Kluft"), in view of teachings and/or suggestions from U.S. Patent 9,032,571 to Rancourt et al. ("Rancourt)".

Independent claim 1 is directed to a mattress assembly comprising a base layer, a coil layer, an upper layer disposed over the coil layer, a stabilization layer disposed over the upper layer, and an elastomeric cushioning element disposed over the stabilization layer. Independent claim 1 further recites that the stabilization layer is secured to a bottom of the elastomeric cushioning element with an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer. As amended, independent claim 1 also recites that elastomeric material is exposed on a lower surface of the stabilization layer. Paragraph **[0031]**.

Independent claim 16 is directed to a method of forming a mattress assembly. The method of independent claim 16 includes disposing a coil layer over a base layer, disposing an upper layer over the coil layer, and disposing an elastomeric cushioning element over the upper layer. Upon disposing the elastomeric cushioning element over the upper layer, a stabilization layer on a bottom surface of the elastomeric cushioning element is brought into contact with the upper layer. As amended, independent claim 16 further recites that a non-slip surface or a reduced slip surface formed by elastomeric material on a lower surface of the stabilization layer is brought into contact with the upper layer. Paragraph **[0031]**.

Kluft teaches a mattress with a foam encasement that surrounds individually wrapped coils. Kluft, col. 3, line 59, to col. 4, line 27. Kluft also teaches placing a sheet layer 100 between the coil layer and an upper layer of the foam encasement. Kluft, col. 4, lines 56-67.

Rancourt teaches a mattress with a silicone contact mat 14 that is integrated into a body support pad 12 "by capillarity during curing" of the silicone contact mat 14. Rancourt, col. 6, lines 56-67.

It is respectfully submitted that neither Kluft nor Rancourt, either alone or when combined in the manner that has been asserted by the Office, teaches or suggests a stabilization layer through which an elastomeric material seeps to secure an elastomeric cushioning element to an upper surface of the stabilization layer, with the elastomeric material being exposed on a

lower surface of the stabilization layer. The Office has already acknowledged at pages 2-3 of the Office Action of July 10, 2020 that Kluft lacks any teaching or suggestion of "an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer." Rancourt acknowledges that "liquid silicone [only] gets into the foam cells" of the body support pad 12 "over a small thickness…" Because neither Kluft nor Rancourt teaches or suggests elastomeric material exposed on a lower surface of a stabilization layer, as required by amended independent claim 1 and amended independent claim 16, it is respectfully submitted that the teachings and/or suggestions of Kluft and Rancourt, as combined by the Office, cannot be relied upon to establish a *prima facie* case of obviousness against amended independent claim 1, amended independent claim 16, or any of their respective dependent claims.

For these reasons, it is respectfully submitted that claims 1-5, 9, and 16 are allowable under 35 U.S.C. § 103.

Kluft, Rancourt, and Mobley

Claim 6 has been rejected under 35 U.S.C. § 103 for being drawn to subject matter that is purportedly not patentable over teachings and/or suggestions from Kluft, in view of teachings and/or suggestions from Rancourt and, further, in view of teachings and/or suggestions from U.S. Patent Application Publication US 2015/0223622 A1 of Mobley ("Mobley").

Claim 6 is allowable, among other reasons, for depending from independent claim 1, which is allowable.

Kluft, Rancourt, and Lafleche

Claims 7, 8, and 20 have been rejected under 35 U.S.C. § 103 for being drawn to subject matter that is purportedly not patentable over teachings and/or suggestions from Kluft, in view of teachings and/or suggestions from Rancourt and, further, in view of teachings and/or suggestions from U.S. Patent 8,910,334 to Lafleche et al. ("Lafleche").

Claims 7 and 8 are allowable, among other reasons, for depending from independent claim 1, which is allowable.

Claim 20 is allowable, among other reasons, for depending from independent claim 20, which is allowable.

Kluft, Rancourt, and JP S61-34951

Claims 10, 11, and 13-15 have been rejected under 35 U.S.C. § 103 for being drawn to subject matter that is purportedly not patentable over teachings and/or suggestions from Kluft, in view of teachings and/or suggestions from Rancourt and JP S61-34951 U.

Independent claim 10 is directed to a mattress assembly comprising a base layer, a coil layer disposed over the base layer, an upper layer disposed over the coil layer, a stabilization layer on the upper layer, and at least one elastomeric cushioning element disposed over the stabilization layer. As amended, independent claim 10 further recites that an elastomeric material of the at least one elastomeric cushioning element seeps through the stabilization layer to secure an upper surface of the stabilization layer to the elastomeric cushioning element and to provide a non-slip surface or a reduced slip surface on a lower surface of the scrim fabric.

The teachings of Kluft and Rancourt are summarized above.

JP S61-34951 U illustrates a mattress with rows of individually wrapped coils that are positioned adjacent to one another in a series of sleeves.

It is respectfully submitted that none of Kluft, Rancourt, or JP S61-34951 U provides any teaching or suggestion of a stabilization layer that comprises a scrim fabric through which an elastomeric material of an elastomeric cushioning element seeps to secure an upper surface of the stabilization layer to the elastomeric cushioning element and to provide a non-slip surface or a reduced slip surface on a lower surface of the scrim fabric.

Moreover, none of Kluft, Rancourt, or JP S61-34951 U provides any teaching or suggestion of an outer covering that encases *both* a coil layer and an elastomeric cushioning element. As the Office has acknowledged, Kluft does not provide any teaching or suggestion of an elastomeric cushioning element (Office Action of July 10, 2020, pages 2-3), so Kluft could not teach or suggest encasement of an elastomeric cushioning element within an outer covering along with the coil layer taught by Kluft.

Although Rancourt teaches an elastomeric cushioning element, the elastomeric cushioning element of Rancourt is a body contact mat for use with a body cushioning pad, such as a mattress. Rancourt does not teach or suggest that the body cushioning pad includes coils or springs. Instead, the teachings and suggestions of Rancourt are limited to: "the body cushioning

pad **12** presents a base **18** made out of lateral bumpers (also referred as framing elements) that surround an array of a plurality of adjacent foam blocks **20** filling a central depression." Rancourt, col. 4, lines 32-35.

JP S61-34951 U discloses a mattress with coils, but provides no teaching or suggestion regarding the desirability of using such a conventional mattress with an elastomeric cushioning element, let alone of combining mattress coils with an elastomeric cushioning element in the manner required by amended independent claim 10.

Since Kluft, Rancourt, and JP S61-34951 U, as combined by the Office, do not teach or suggest each and every element of amended independent claim 10, it is respectfully submitted that the teachings and/or suggestions of these references, as combined by the Office, cannot be relied upon to establish a *prima facie* case of obviousness against amended independent claim 10, as would be needed for the Office to maintain 35 U.S.C. § 103 rejections of independent claim 10 and its dependent claims.

It is, therefore, respectfully submitted that claims 10, 11, and 13-15 are allowable under 35 U.S.C. § 103.

Kluft, Rancourt, JP S61-34951 U, and An

Claim 12 has been rejected under 35 U.S.C. § 103 for being drawn to subject matter that is purportedly not patentable over teachings and/or suggestions from Kluft, in view of teachings and/or suggestions from Rancourt, JP S61-34951 U, and U.S. Patent 7,757,322 to An ("An").

Claim 12 is allowable, among other reasons, for depending from independent claim 10, which is allowable.

Kluft, Rancourt, and An

Claims 17-19 have been rejected under 35 U.S.C. § 103 for being drawn to subject matter that is purportedly not patentable over teachings and/or suggestions from Kluft, in view of teachings and/or suggestions from Rancourt and, further, teachings and/or suggestions from An.

Claims 17-19 are allowable, among other reasons, for depending from independent claim 16, which is allowable.

In view of the foregoing, withdrawal of the 35 U.S.C. § 103 rejections of claims 1-20 is respectfully requested, as is the allowance of each of these claims.

CONCLUSION

It is respectfully submitted that each of claims 1-20 is allowable. An early notice of the allowability of each of these claims is respectfully solicited. If any issues preventing allowance of the above-captioned application remain, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,

/brick g power/

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Attorney for Applicant
DURHAM JONES & PINEGAR, P.C.
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3301 North Thanksgiving Way, Suite 400
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Telephone: (801) 375-6600

Date: September 10, 2020
BGP/skp

IN THE CLAIMS

1. (Currently amended) A mattress assembly, comprising:

a base layer;

a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils;

an upper layer disposed over the coil layer;

a stabilization layer comprising a scrim fabric disposed over the upper layer;

an elastomeric cushioning element disposed over the ~~upper layer, a~~ stabilization layer ~~secured to a bottom of the elastomeric cushioning element~~, an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer to secure an upper surface of the stabilization layer to the elastomeric cushioning element, the elastomeric material exposed on a lower surface of the stabilization layer; and

an outer covering encasing the base layer, the coil layer, the upper layer, the stabilization layer, and the elastomeric cushioning element.

2. (Previously presented) The mattress assembly of claim 1, wherein:

the coil layer has a thickness of about 6.00 inches to about 8.00 inches; and

the elastomeric cushioning element has a thickness of about 2.0 inches to about 4.5 inches.

3. (Previously presented) The mattress assembly of claim 2, wherein:

the coil layer has a thickness of about 7.50 inches; and

the elastomeric cushioning element has a thickness of about 4.0 inches.

4. (Previously presented) The mattress assembly of claim 1, further comprising:

one or more side panels extending around outer perimeters of the base layer and the upper layer, the outer covering also encasing the one or more side panels.

5. (Original) The mattress assembly of claim 1, wherein the base layer and the upper layer both comprise a polyurethane foam.

6. (Previously presented) The mattress assembly of claim 1, wherein the stabilization layer provides a slip-resistant surface against the upper layer.

7. (Previously presented) The mattress assembly of claim 1, wherein the stabilization layer is secured to the upper layer.

8. (Previously presented) The mattress assembly of claim 7, wherein the stabilization layer is adhesively secured to the upper layer.

9. (Previously presented) The mattress assembly of claim 1, wherein the base layer has a thickness of about 0.75 inches to about 1.50 inches and the upper layer has a thickness of about 0.25 inches to about 0.75 inches.

10. (Currently amended) A mattress assembly, comprising:

a base layer;

a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils, each pocketed coil of the plurality of pocketed coils comprising:

a plurality of nested casings; and

a single coil disposed within an innermost casting of the plurality of nested casings;

an upper layer disposed over the coil layer;

a stabilization layer comprising a scrim fabric on the upper layer; and

at least one elastomeric cushioning element disposed over the ~~upper layer, a~~ stabilization layer ~~on a bottom surface of the at least one elastomeric cushioning element~~, an elastomeric material of the at least one elastomeric cushioning element seeping through the scrim fabric of the stabilization layer to secure an upper surface of the stabilization layer to the elastomeric cushioning element and to provide a non-slip surface or a reduced slip surface on a lower surface of the scrim fabric; and

an outer covering encasing the base layer, the coil layer, the upper layer, the stabilization layer, and the at least one elastomeric cushioning element.

11. (Original) The mattress assembly of claim 10, wherein the plurality of pocketed coils are oriented next to each other in a grid pattern.

12. (Previously presented) The mattress assembly of claim 10, wherein the plurality of nested casings of each pocketed coil comprises:

a first casing; and

a single second casing disposed within the first casing, with the single coil being disposed within the second casing.

13. (Original) The mattress assembly of claim 10, wherein the at least one elastomeric cushioning element comprises a plurality of distinct elastomeric cushioning elements disposed at different locations over the upper layer.

14. (Previously presented) The mattress assembly of claim 10, wherein the at least one elastomeric cushioning element covers a portion of an upper surface of the upper layer.

15. (Previously presented) The mattress assembly of claim 11, wherein the at least one elastomeric cushioning element comprises a grid of interconnected walls defining hollow buckling columns.

16. (Currently amended) A method of forming a mattress assembly, comprising:

disposing a coil layer over a base layer;

disposing an upper layer over the coil layer;

disposing an elastomeric cushioning element over the upper layer including bringing a stabilization layer and a non-slip surface or a reduced slip surface formed by elastomeric material on a lower surface of the stabilization layer into contact with the upper layer, the stabilization layer being located on a bottom surface of the elastomeric cushioning element, ~~an~~ the elastomeric material of the elastomeric cushioning element ~~seeping through~~ securing the elastomeric cushioning element to an upper surface of the stabilization layer; and

encasing the base layer, the coil layer, the upper layer, the stabilization layer, and the elastomeric cushioning element in an outer casing.

17. (Previously presented) The method of claim 16, further comprising:

individually disposing each coil of the coil layer within a first casing; and

individually disposing the first casing within a second casing.

18. (Previously presented) The method of claim 17, wherein individually disposing each coil of the coil layer within the first casing comprises individually disposing the coil within a polypropylene bag.

19. (Previously presented) The method of claim 18, wherein individually disposing the first casing within the second casing comprises individually disposing the first casing within a polypropylene bag.

20. (Previously presented) The method of claim 16, further comprising:

securing the stabilization layer to the upper layer.

PTO/SB/06 (09-11)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/816,983	Filing Date 11/17/2017	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $80 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $420 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

AMENDMENT	09/10/2020	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/TARA A WASHINGTON/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Purple Innovation, LLC

Application No.: 15/816,983

Filed: November 17, 2017

Confirmation No.: 9411

For: MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

Art Unit: 3673

Examiner: McClure, Morgan J.

Attorney Docket No.: 54023-3030US01

VIA EFS
September 10, 2020

AMENDMENT UNDER 37 C.F.R. § 1.116

Commissioner for Patents
United States Patent and Trademark Office
P. O. BOX 1450
Alexandria, VA 22313-1450

Examiner:

This Amendment follows the final Office Action of July 10, 2020.

A listing of the claims, in which proposed revisions to the claims are presented, begins on page 2 of this paper; and

Remarks start at page 6 of this paper.

PTO/SB/08a (02-18)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15816983
Filing Date	2017-11-17
First Named Inventor	Tony M. Pearce
Art Unit	3673
Examiner Name	McClure, Morgan J.
Attorney Docket Number	54023-3030US01

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15816983
	Filing Date	2017-11-17
	First Named Inventor	Tony M. Pearce
	Art Unit	3673
	Examiner Name	McClure, Morgan J.
	Attorney Docket Number	54023-3030US01

	1	INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY, International Application Number PCT/US2018/060680, May 19, 2020

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15816983
Filing Date	2017-11-17
First Named Inventor	Tony M. Pearce
Art Unit	3673
Examiner Name	McClure, Morgan J.
Attorney Docket Number	54023-3030US01

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☒ See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/brick g power/	Date (YYYY-MM-DD)	2020-07-28
Name/Print	Brick G. Power	Registration Number	38581

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 54023-3030WOU1	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2018/060680	International filing date *(day/month/year)* 13 November 2018 (13.11.2018)	Priority date *(day/month/year)* 17 November 2017 (17.11.2017)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant PURPLE INNOVATION, LLC		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 8 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☒	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 19 May 2020 (19.05.2020)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Athina Nickitas-Etienne e-mail: pct.team4@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2018/060680	13.11.2018	17.11.2017

International Patent Classification (IPC) or both national classification and IPC
INV. A47C27/00 A47C27/05 A47C27/06 A47C27/14 A47C27/15 A47C7/00 A47C11/00

Applicant
PURPLE INNOVATION, LLC

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Fax: +31 70 340 - 3016	see form PCT/ISA/210	Pössinger, Tobias Telephone No. +31 70 340-0

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

   a. ☐ forming part of the international application as filed:

      ☐ in the form of an Annex C/ST.25 text file.

      ☐ on paper or in the form of an image file.

   b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

   c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

      ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

      ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	3, 5, 7-12, 14, 15
	No:	Claims	1, 2, 4, 6, 13
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-15
Industrial applicability (IA)	Yes:	Claims	1-15
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

1 **Re Item V**

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1 WO 2011/072022 A1 (OTIS BED MFG COMPANY INC [US]; ROMA JOHN K [US]) 16 June 2011 (2011-06-16)

D2 US 8 434 748 B1 (PEARCE TONY M [US] ET AL) 7 May 2013 (2013-05-07)

D3 US 2017/251825 A1 (PEARCE TONY M [US]) 7 September 2017 (2017-09-07)

D4 JP S61 34951 U (-) 4 March 1986 (1986-03-04)

1.1 Independent claims 1, 13

Document D1 discloses, in the words of claim 1 at hand, but the references in parentheses applying to D1, see Fig. 2:

A mattress assembly (10), comprising:

a base layer (26);

a coil layer (16) disposed over the base layer (26), the coil layer (16) comprising a plurality of pocketed (24) coils (22);

an upper layer (32) disposed over the coil layer (16); and

an elastomeric cushioning element (34, [0002]) disposed over the upper layer, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches (5.08 cm) to about 4.5 inches (11.43 cm) (thickness of 2, 3 or 4 inches, see [0032]).

Document D1 further discloses, in the words of claim 13 at hand, but the references in parentheses applying to D1, see Fig. 2:

A method of forming a mattress assembly (10), comprising:

disposing a coil layer (16; 6 inches, [0029]; compare also Fig. 2, 3 for dimensions/ directions) over a base layer (26; 2 inches, [0029]);

disposing an upper layer (32; 1.5 inches, [0029]) over the coil layer (16);

disposing an elastomeric cushioning element (34; 2, 3 or 4 inches, [0032]) over the upper layer (32), wherein a thickness of the elastomeric cushioning element (34) comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly (10); and

disposing an outer covering (20) over at least the upper layer (32).

The subject-matter of claims 1, 13 is therefore not novel in the sense of Article 33(2) PCT. Consequently, the present application does not meet the criteria of Article 33(1) PCT.

1.2 Dependent claims

Dependent claims 2-12, 14, 15 do not appear to contain with regard to D1-D4 any additional features which, in combination with the features of any claim to which they refer, meet the requirements of novelty in the sense of Article 33(2) PCT, and/or meet the requirements of inventive step in the sense of Article 33(3) PCT. The reasons are as follows:

The subject-matter of claims 2, 6 is not novel, the subject-matter of claims 3, 5, 9 is not not inventive: see e.g. coil layer (16; 6 inches, [0029]; compare also Fig. 2, 3 for dimensions/directions) and elastomeric cushioning element (34; 4 inches, [0032]) in Fig. 2 of D1; the person skilled in the art would regard it as a normal design option to use a slightly thicker coil layer or to use slightly thinner base/upper layers for providing more support to a user (D1, [0002]). Furthermore, it would be obvious for the skilled worker to use polyurethane as a foam material also for base and upper layers (D1, [0032]).

The subject-matter of claim 4 is not novel, the subject-matter of claims 7, 8 is not not inventive: see e.g. side panels (28, 30) and outer covering (20). For alternative, obvious fixing methods of the upper cushion (14) and the elastomeric cushioning element (34), respectively, see e.g. D1, [0029], [0030], D2, Fig. 7, col. 7, l. 61 - col. 8, l. 6.

The subject-matter of claims 10, 11, 14, 15 is not inventive: the features of the foresaid claims are no more than a mere aggregation of features generating no synergistic effect and known in the prior art; see e.g. first (B, C) and second (D, E) casings for each coil (A) in Fig. 2 of D4.

The subject-matter of claim 12 is not inventive: compare alternative, well known cushioning elements of D2, D3.

2 **Re Item VII**

Certain defects in the international application

2.1 Two-part form

The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT with those features known in combination from the prior art being placed in the preamble (Rule 6.3(b)(i) PCT) and the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

2.2 State of the art

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1 is not mentioned in the description, nor is this prior art identified therein.

2.3 Reference signs

The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

2.4 Units

The units of "density" employed on page 7, l. 11, 13 and on p. 14, l. 24 are not additionally expressed in terms of the units stipulated by Rule 10.1(a) PCT (metric system).

3 **Re Item VIII**

Certain observations on the international application

3.1 General statements

The vague and imprecise statements in the description, from p. 16, l. 5 to p. 18, l. 8, imply that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in a lack of clarity of the claims (Article 6 PCT) when the description is used to interpret the claims (see Guidelines F-IV, 4.4). These statements should therefore be amended, either by removing or by replacing with an expression such as "the invention as defined in the appended claims".

3.2 Reference documents

The patent specification should, regarding the essential features of the invention, be self contained, i. e. capable of being understood without reference to any other document. Therefore, the expressions (similar to) "which is hereby fully incorporated by reference herein" on p. 7, l. 6, 17 and on p. 9, l. 9, 19 should be deleted from the description.

Electronic Patent Application Fee Transmittal

Application Number:	15816983
Filing Date:	17-Nov-2017
Title of Invention:	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
First Named Inventor/Applicant Name:	Tony M. Pearce
Filer:	Brick Glenn Power/stacia pentz-boren
Attorney Docket Number:	54023-3030US01

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	240	240
		Total in USD ($)		**240**

Electronic Acknowledgement Receipt

EFS ID:	40127752
Application Number:	15816983
International Application Number:	
Confirmation Number:	9411
Title of Invention:	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
First Named Inventor/Applicant Name:	Tony M. Pearce
Customer Number:	128128
Filer:	Brick Glenn Power/stacia pentz-boren
Filer Authorized By:	Brick Glenn Power
Attorney Docket Number:	54023-3030US01
Receipt Date:	28-JUL-2020
Filing Date:	17-NOV-2017
Time Stamp:	16:20:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$240
RAM confirmation Number	E20207RG20250006
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	2020-07-28-sb0008a-IDS-54023-3030US01.pdf	1034348 224090686ecaa0284c0a42af60a7967823e0faa7	no	4
Warnings:					
Information:					
A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.					
2	Other Reference-Patent/App/Search documents	IPRP.pdf	275386 7ccc97c05019b5b44b98e9f747797035794 25fe8	no	8
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30867 b44e0cef22466e3f5c309b3191058c99c1f1 7c89	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1340601		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/816,983	11/17/2017	Tony M. Pearce	54023-3030US01	9411

128128 7590 07/10/2020

Durham Jones & Pinegar, P.C.
Intellectual Property Law Group
3301 N. Thanksgiving Way, Suite 400
Lehi, UT 84043

EXAMINER
MCCLURE, MORGAN J

ART UNIT	PAPER NUMBER
3673	

NOTIFICATION DATE	DELIVERY MODE
07/10/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

apower@djplaw.com
ipmail@djplaw.com
sboren@djplaw.com

Office Action Summary	Application No. 15/816,983	Applicant(s) Pearce et al.	
	Examiner MORGAN J MCCLURE	Art Unit 3673	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 4/7/2020.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-20 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-20 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 12/13/2017 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Response to Arguments

Applicant's arguments filed 4/7/2020 have been fully considered but they are not persuasive. Applicant's arguments relate to the amendments, for which new references are being used as set forth below, and thus the arguments no longer apply.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 1-5, 9, and 16 is/are rejected under 35 U.S.C. 103 as being unpatentable over Kluft (US Patent 7640611) in view of Rancourt (US Patent 9032571).

a. Regarding claim 1, Kluft teaches a mattress assembly, comprising: a base layer (Figure 2; 60 (the portion under the springs 156)); a coil layer (Figure 2; 156) disposed over the base layer, the coil layer comprising a plurality of pocketed coils (Figure 2; 156, shows pockets around the coils); an upper layer (Figure 2; 102) disposed over the coil layer; and a cushioning element (Figure 2; 106) disposed over the upper layer. Kluft does not teach the cushioning element is an elastomeric cushioning element and a stabilization layer secured to a bottom of the elastomeric

cushioning element, an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer and an outer covering encasing the base layer, the coil layer, the upper layer, the stabilization layer, and the elastomeric cushioning element. Rancourt teaches the cushioning element is an elastomeric cushioning element (Figure 5, 14 and Column 6; lines 50-67) and a stabilization layer (Column 6; lines 50-67, foam pad 12) secured to a bottom of the elastomeric cushioning element, an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer (Column 6; lines 50-67) and an outer covering (Column 4; lines 19-25) encasing the base layer, the coil layer, the upper layer, the stabilization layer, and the elastomeric cushioning element. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning layer 106 of Kluft to be elastomeric as in Rancourt in order to increase user comfort according to user preference by including resiliency in the mattress, and it would have been obvious to include a stabilization layer to prevent sliding and movement of the elastomeric layer, and it would have been obvious to include an outer covering to protect the internal components and hold them securely together.

b. Regarding claim 2, Kluft does not specifically teach the coil layer has a thickness within a range of about 6.00 inches and about 8.00 inches. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the coil layer of Kluft to be between 6 and 8 inches in order to create a sufficiently soft yet elastic surface according to user preference, and doing so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961). Kluft also does not specifically teach wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning element 106 of Kluft to be between 2 and 4 inches in order to create a sufficiently

soft surface according to user preference, and doing so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839,129 USPQ 402 (CCPA 1961).

c. Regarding claim 3, Kluft does not specifically teach the coil layer has a thickness of about 7.50 inches. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the coil layer of Kluft to be 7.5 inches in order to create a sufficiently soft yet elastic surface according to user preference, and doing so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839,129 USPQ 402 (CCPA 1961). Kluft also does not specifically teach wherein the elastomeric cushioning element has a thickness of about 4 inches. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning element 106 of Kluft to be between about 4 inches in order to create a sufficiently soft surface according to user preference, and doing so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839,129 USPQ 402 (CCPA 1961).

d. Regarding claim 4, Kluft teaches one or more side panels extending around outer perimeters of the base layer and the upper layer (Figure 5; 124). Rancourt teaches the outer covering also encasing the one or more side panels (Column 4; lines 19-25, the outer covering encases the entire interior structure).

e. Regarding claim 5, Kluft teaches the base layer (Column 3; lines 60-65) and the upper layer (Column 4; lines 57-60) both comprise a polyurethane foam.

f. Regarding claim 9, Kluft does not specifically teach the base layer has a thickness of about 0.75 inch and about 1.50 inches, and wherein the upper layer has a thickness of about 0.25 inch and about 0.75 inch. It would have been obvious to one of ordinary skill in the art at

the time of invention to modify the upper layer of Kluft to be between .25 and .75 inches and the base layer to have a thickness of between .75 and 1.5 inches in order to create a sufficiently soft surface according to user preference, and doing so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961).

g. Regarding claim 16, Kluft teaches method of forming a mattress assembly, comprising: disposing a coil layer (Figure 2; 156) over a base layer (Figure 2; 60 (the portion under the springs 156)); disposing an upper layer (Figure 2; 102) over the coil layer; disposing an cushioning element (Figure 2; 106) over the upper layer, and disposing an outer covering over at least the upper layer (Figure 1; outermost layer of 108). Kluft does not teach the cushioning element is an elastomeric cushioning element, including bringing a stabilization layer into contact with the upper layer, the stabilization layer being located on a bottom surface of the elastomeric cushioning element, an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer. Rancourt teaches the cushioning element is an elastomeric cushioning element (Figure 5, 14 and Column 6; lines 50-67), including bringing a stabilization layer (Column 6; lines 50-67, foam pad 12) into contact with the upper layer, the stabilization layer being located on a bottom surface of the elastomeric cushioning element, an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer (Column 6; lines 50-67). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning layer 106 of Kluft to be elastomeric as in Rancourt in order to increase user comfort according to user preference by including resiliency in the mattress, and it would have been obvious to include a stabilization layer to prevent sliding and movement of the elastomeric layer.

2. Claim 6 is/are rejected under 35 U.S.C. 103 as being unpatentable over Kluft (US Patent 7640611) in view of Rancourt (US Patent 9032571) further in view of Mobley (US Patent Application Publication 20150223622).

h. Regarding claim 6, Kluft and Rancourt do not specifically teach the stabilization layer provides a slip-resistant surface against the upper layer. Mobley teaches the stabilization layer provides a slip-resistant surface against the upper layer (Paragraph 14 discusses foaming foams of a high friction material to inhibit friction against other layers of foam in a cushion device). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the foam of Kluft and Rancourt to have a high coefficient of friction in order to "inhibit slippage therebetween" (Paragraph 14 of Mobley).

3. Claims 7, 8, and 20 is/are rejected under 35 U.S.C. 103 as being unpatentable over Kluft (US Patent 7640611) in view of Rancourt (US Patent 9032571) further in view of Lauer (US Patent Application Publication 20140130265).

i. Regarding claim 7, Kluft does not teach wherein the stabilization layer is secured to the upper layer. Lauer teaches wherein the stabilization layer is secured to the upper layer (Claim 22). It would have been obvious to one of ordinary skill in the art to use an adhesive on the layers of Kluft and Rancourt in order to prevent sliding of the layers in relation to each other.

j. Regarding claim 8, Kluft does not specifically teach the stabilization layer is adhesively secured to the upper layer. Lauer teaches the stabilization layer is adhesively secured to the upper layer (Claim 22). It would have been obvious to one of ordinary skill in the art to use an adhesive on the layers of Kluft and Rancourt in order to prevent sliding of the layers in relation to each other.

k. Regarding claim 20, Kluft does not teach securing the stabilization layer to the upper layer. Lauer teaches securing the stabilization layer to the upper layer (Claim 22). It would have

been obvious to one of ordinary skill in the art to use an adhesive on the layers of Kluft and Rancourt in order to prevent sliding of the layers in relation to each other.

4. Claims 10, 11, and 13-14 is/are rejected under 35 U.S.C. 103 as being unpatentable over Kluft (US Patent 7640611) in view of Rancourt (US Patent 9032571) further in view of JP S6134951 (hereafter 'the 951 patent').

l. Regarding claim 10, Kluft teaches a mattress assembly, comprising: a base layer (Figure 2; 60 (the portion under the springs 156)); a coil layer (Figure 2; 156) disposed over the base layer, the coil layer comprising a plurality of pocketed coils (Figure 2; 156, shows pockets around the coils); each pocketed coil of the plurality of pocketed coils comprises: a plurality of casings (Figure 1; 84); and a coil (Figure 2; 156) disposed within the plurality of casings; an upper layer (Figure 2; 102) disposed over the coil layer; and at least one cushioning element (Figure 2; 106) disposed over the upper layer. Kluft does not teach the cushioning element is an elastomeric cushioning element, a stabilization layer on a bottom of the elastomeric cushioning element, an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer and an outer covering encasing the base layer, the coil layer, the upper layer, the stabilization layer, and the elastomeric cushioning element, and the coil is a single coil disposed within an innermost casing of the plurality of nested casings. Rancourt teaches the cushioning element is an elastomeric cushioning element (Figure 5, 14 and Column 6; lines 50-67) and a stabilization layer (Column 6; lines 50-67, foam pad 12) on a bottom of the elastomeric cushioning element, an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer (Column 6; lines 50-67) and an outer covering (Column 4; lines 19-25) encasing the base layer, the coil layer, the upper layer, the stabilization layer, and the elastomeric cushioning element. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning layer 106 of Kluft to be elastomeric as in

Rancourt in order to increase user comfort according to user preference by including resiliency in the mattress, and it would have been obvious to include a stabilization layer to prevent sliding and movement of the elastomeric layer, and it would have been obvious to include an outer covering to protect the internal components and hold them securely together. The 951 patent teaches and the coil is a single coil disposed within an innermost casing of the plurality of nested casings (Figures 2, A is a single coil within the two nested casings B and D). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the springs of Kluft to be within two casings in order to provide additional firmness as desired to the springs, as well as to protect them from outside dirt and liquid.

m. Regarding claim 11, Kluft teaches the plurality of pocketed coils are oriented next to each other in a grid pattern (Figure 1; 80, 84).

n. Regarding claim 13, Kluft does not teach the at least one elastomeric cushioning element comprises a plurality of distinct elastomeric cushioning elements disposed at different locations over the upper layer. Rancourt teaches the at least one elastomeric cushioning element comprises a plurality of distinct elastomeric cushioning elements disposed at different locations over the upper layer (Figure 5; 28). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning layer 106 of Kluft to be elastomeric as in Rancourt in order to increase user comfort according to user preference by including resiliency in the mattress.

o. Regarding claim 14, Kluft does not teach the at least one cushioning element covers a portion of an upper surface of the upper layer (Figure 1; 106). Rancourt teaches the cushioning element is elastomeric (Figure 5; 28).

5. Claims 12 is/are rejected under 35 U.S.C. 103 as being unpatentable over Kluft (US Patent 7640611) in view of Rancourt (US Patent 9032571) in view of JP S6134951 (hereafter 'the 951 patent') further in view of An (US Patent 7757322).

p. Regarding claim 12, Kluft does not teach the plurality of nested casings of each pocketed coil comprises: a first casing; and a single second casing disposed within the first casing, with the single coil being disposed within the second casing. An teaches the plurality of nested casings of each pocketed coil comprises: a first casing (Figure 20, the foam casing 10a); and a single second casing disposed within the first casing (Figure 20, the pockets each spring is in), with the single coil being disposed within the second casing (Figure 20, 10c). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the springs of Kluft to be within two casings in order to provide additional firmness as desired to the springs, as well as to protect them from outside dirt and liquid.

6. Claim 15 is/are rejected under 35 U.S.C. 103 as being unpatentable over Kluft (US Patent 7640611) in view of Rancourt (US Patent 9032571) further in view of JP S6134951 (hereafter 'the 951 patent') further in view of McCann (US Patent Application Publication 20050223667).

q. Regarding claim 15, Kluft and Rancourt do not teach the at least one elastomeric cushioning element comprises a grid of interconnected walls defining hollow buckling columns. McCann teaches the at least one elastomeric cushioning element comprises interconnected buckling walls (abstract). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning layer 106 of Rancourt to be buckling as in McCann in order to increase user comfort by creating a deforming surface within the cushion.

7. Claims 17-19 is/are rejected under 35 U.S.C. 103 as being unpatentable over Kluft (US Patent 7640611) in view of Rancourt (US Patent 9032571) further in view of An (US Patent 7757322).

r. Regarding claim 17, Kluft teaches individually disposing each coil of the coil layer a first casings (Figure 1; 80, 84). Kluft does not teach and individually disposing the first casing within a second casing. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the springs of Kluft to be within two casings in order to provide additional firmness as desired to the springs, as well as to protect them from outside dirt and liquid. An teaches and individually disposing the first casing within a second casing (Figure 20, the pockets are individually disposed within a foam casing). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the springs of Kluft to be within two casings in order to provide additional firmness as desired to the springs, as well as to protect them from outside dirt and liquid.

s. Regarding claim 18, Kluft and An do not specifically teach wherein individually disposing each coil of the coil layer within the first casing comprises individually disposing the coil within a polypropylene bag. However, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the pockets of Kluft and An to be polypropylene bags in order to provide a tough, chemically resistant layer of protection to the springs and the selection of a known material based upon its suitability for the intended use is a design consideration within the level of skill of one skilled in the art. In re Leshin, 227 F.2d 197, 125 USPQ416 (CCPA 1960).

t. Regarding claim 19, Kluft and An does not teach individually disposing the first casing within the second casing comprises individually disposing the first casing within a polypropylene bag. However, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the pockets of Kluft and An to be polypropylene bags in order to provide a tough, chemically resistant layer of protection to the springs and the selection of a known material based upon its suitability for the intended use is a design consideration within the level of skill of one skilled in the art. In re Leshin, 227 F.2d 197, 125 USPQ416 (CCPA 1960).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MORGAN J MCCLURE whose telephone number is (571)270-0362. The examiner can normally be reached on M-F 8:30am - 5:00pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Cuomo can be reached on 5712726856. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see https://ppair-

my.uspto.gov/pair/PrivatePair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MORGAN J MCCLURE/
Examiner, Art Unit 3673

/NICHOLAS F POLITO/
Primary Examiner, Art Unit 3619
7/6/20

Notice of References Cited	Application/Control No. 15/816,983	Applicant(s)/Patent Under Reexamination Pearce et al.	
	Examiner MORGAN J MCCLURE	Art Unit 3673	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20150223622-A1	08-2015	Mobley; Edward	A47G9/1054	5/638
*	B	US-9032571-B2	05-2015	Rancourt; Denis	A47C27/146	5/652
*	C	US-7757322-B2	07-2010	An; Jung Ho	A47C27/001	5/722
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N	JP S6134951	04-1986	Japan	Unknown	A47C27/07
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/816,983	Pearce et al.
	Examiner	Art Unit
	MORGAN J MCCLURE	3673

CPC - Searched*		
Symbol	Date	Examiner
A47C27/20,001,056,06,064,146,148,15	01/02/2020	MM

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Inventor Name Search	01/02/2020	MM
Updated Search	07/02/2020	MM

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/MORGAN J MCCLURE/ Examiner, Art Unit 3673	

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15816983
Filing Date	2017-11-17
First Named Inventor	Tony M. Pearce
Art Unit	3673
Examiner Name	McClure, Morgan J.
Attorney Docket Number	54023-3030US01

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20170251825	A1	2017-09-07	Pearce	

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	1	2011072022	WO	A1	2011-06-16	Otis Bed Manufacturing Company, Inc.		
	2	S6134951	JP	U	1986-03-04	Kariya et al.		X

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Attorney Docket Number	54023-3030US01

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	EUROPEAN PATENT OFFICE as INTERNATIONAL SEARCHING AUTHORITY, International Search Report and Written Opinion, International application no. PCT/US2018/060680, December 20, 2018	

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EXAMINER SIGNATURE

Examiner Signature	/MORGAN J MCCLURE/	Date Considered	07/02/2020

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15816983
Filing Date	2017-11-17
First Named Inventor	Tony M. Pearce
Art Unit	3673
Examiner Name	McClure, Morgan J.
Attorney Docket Number	54023-3030US01

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/brick g power/	Date (YYYY-MM-DD)	2020-04-07
Name/Print	Brick G. Power	Registration Number	38581

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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The EPO does not accept responsibility for the accuracy of data originating from authorities other than the EPO, nor does it guarantee that such data is complete, up-to-date or fit for specific purposes.

The wording below is an initial machine translation of the original publication. To apply more advanced translation technology, use Patent Translate.

[0001] BRIEF DESCRIPTION OF THE DRAWINGS

[0002] FIG. 1 is a perspective view of a spring assembly according to the present invention, and FIG. 2 is a perspective view of a conventional sprinkle assembly. 1 ... coil spring, 2 ... packing bag row.

⑲日本国特許庁（JP）　⑪実用新案出願公開

⑫公開実用新案公報（U）　昭61－34951

⑤Int.Cl.⁴	識別記号	庁内整理番号	㊸公開　昭和61年(1986)3月4日
A 47 C 27/07		7309－3B	

審査請求　未請求　（全　頁）

㊹考案の名称　マットレス用スプリング構体

㉑実　願　昭59－119067

㉒出　願　昭59(1984)7月31日

㉒考案者　内藤　公孝　刈谷市朝日町2丁目1番地　アイシン精機株式会社内

㉒考案者　横井　伸二　刈谷市朝日町2丁目1番地　アイシン精機株式会社内

㉑出願人　アイシン精機株式会社　刈谷市朝日町2丁目1番地

明　　細　　書

1. 考案の名称

マットレス用スプリング構体

2. 実用新案登録請求の範囲

布、不織布その他の自由に立体になじみ易い部材で造られた上下一対のシートを縫合または溶着して縦列並列しなる筒袋列において、一方のシートが平面状で他方のシートをたるませてなる筒袋列で、かつ平面状になる側のシートの材料を他方のシートに比較し剛さを持った材料で構成した筒袋列内にポケットコイル列を封入し、矩形平板状に構成したスプリング体の上下面の外周に枠線をコイルスプリング及び筒袋へ同時に固定することにより取りつけたマットレス用スプリング体。

3. 考案の詳細な説明

〔考案の目的〕

本考案は、マットレス用スプリング構体に関するものである。

〔従来技術〕

従来のマットレス用スプリング構体は、実開昭

Exhibit 1002
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５７－２０１２６１号公報に開示されている。すなわち、第２図に示すように、コイルスプリングＡを内封した包袋Ｂの相隣接部を縫合して縦列並立してなる包袋列Ｃを、相隣接部が縫合または溶着されて縦列並立してなる筒袋列Ｄに封入してマットレス用スプリング体Ｅが形成されている。

（考案が解決しようとする問題点）

ところが、上下面共同一硬さであるため、特に夏季における身体への密着感の強いこの種のスプリング体においては寝苦さがあった。

それ故に、本考案は、上下面の硬さが異なるマットレス用スプリング構体を提供することを、技術的課題とすることである。

〔考案の構成〕

（問題点を解決するための手段）

前記技術的課題を解決するために講じた技術的手段は、布、不織布その他の自由に立体になじみ易い部材で造られた上下一対のシートを縫合または溶着して縦列並列しなる筒袋列において、一方のシートが平面状で他方のシートをたるませてな

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る筒袋列で、かつ平面状になる側のシートの材料を他方のシートに比較し剛さを持った材料で構成した筒袋列内にポケットコイル列を封入し、矩形平板状に構成したスプリング体の上下面の外周に枠線をコイルスプリング及び筒袋へ同時に固定することによりスプリング構体を構成したことである。

（作用）

かくして、マットレスのバネ受材や詰物を変更することなく、マットレスの上下面の硬さを異ならしめることができる。

（実施例）

第1図においてコイルスプリング1は包袋列2の中に封入されポケットコイル列3を構成している。布、不織布等による筒袋材4は平面状に、また筒袋材5は筒袋材4に対し一定ピッチで筒袋を形成するようたるませて、一定間隔で上下に筒袋4，5を縫製又は溶着により接合され縦列並立してなる筒袋列6を構成する。ポケットコイル列3は前記筒袋列6の各筒袋内にそれぞれで封入され

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平板状のスプリング体を形成する。このスプリング体の上下面の外周に鋼線により造られた枠線7を配置し、ボウリング8によりコイルスプリング1、包袋列2、筒袋材3，4を同時に固定してスプリング構体を構成する。

なお、筒袋材4は筒袋材5に比較し、剛さのある材質を使用している。しかして、スプリング構体の下面側のクッション性はポケットコイル列3が筒袋材5により完全に分離された如く連結されているため、身体の形状にフイットするように各コイルスプリング袋が独立してたわむことができる。またスプリング構体の上面側については、筒袋材4が平面上に構成されているため、体量が相隣接する筒袋列6内の各ポケットスプリング列に分散されるため、下面側に比較し、クッションが硬く感じられ身体へのフイット度合も軽減される。本考案においては筒袋材5より筒袋材4の方が剛い材料を使用し外周を枠線7に固定しているため上面側の体重分散効果はさらに強化される。

〔効果〕

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本考案のスプリング構体を使用することにより、マットレスのバネ受材や詰物等を上下面それぞれ変更することなく、マットレス上下面の硬さの異なるマットレスを製作することを容易にするものである。

4. 図面の簡単な説明

第1図は本考案に係るスプリング構体の斜視図、および第2図は従来のスプリング構体の斜視図である。

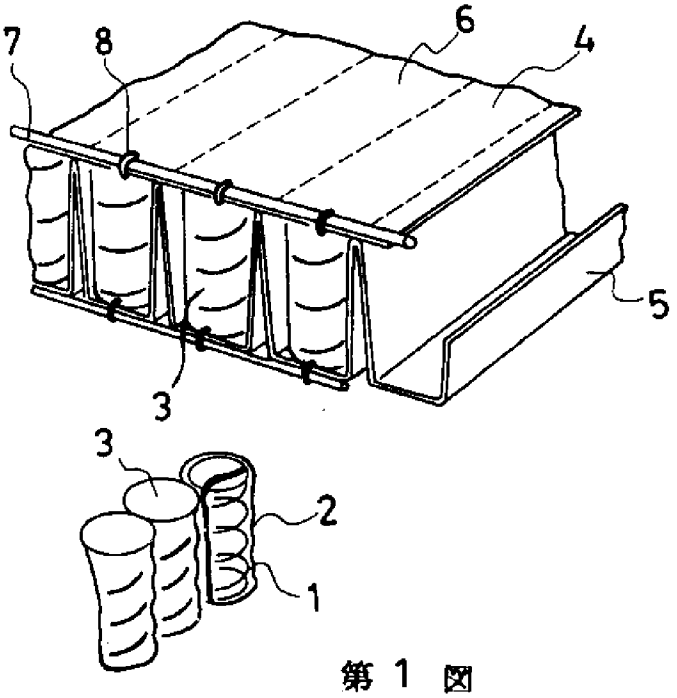
1…コイルスプリング，2…包袋列。

実用新案登録出願人

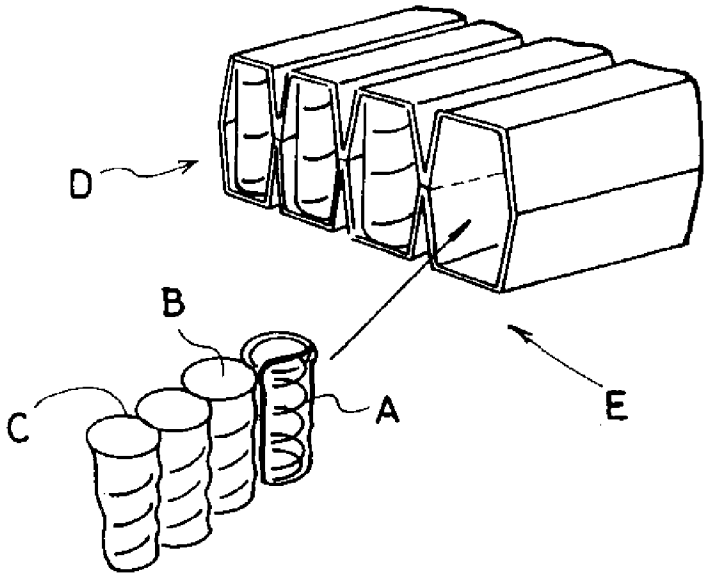
アイシン精機株式会社

代表者 中 井 令 夫

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第 1 図



第 2 図

467

実開61-31952

出願人 アイシン精機株式会社
代表者 中 [illegible]

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
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L3	4	L2 and (adhesive with foam)	US-PGPUB; USPAT; USOCR	OR	OFF	2020/07/02 18:04
L4	77,763	"5".clas.	US-PGPUB; USPAT; USOCR	OR	OFF	2020/07/02 18:12
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L6	114	L4 and (foam with (friction (anti adj slip) (anti-slip) slip)) and layers	US-PGPUB; USPAT; USOCR	OR	OFF	2020/07/02 18:12
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EAST Search History (Interference)

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7/2/2020 7:12:42 PM
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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Purple Innovation, LLC

Application No.: 15/816,983

Filed: November 17, 2017

Confirmation No.: 9411

For: MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

Art Unit: 3673

Examiner: McClure, Morgan J.

Attorney Docket No.: 54023-3030US01

VIA EFS
April 7, 2020

AMENDMENT

Commissioner for Patents
United States Patent and Trademark Office
P. O. BOX 1450
Alexandria, VA 22313-1450

Examiner:

This Amendment follows the Office Action of January 7, 2020.

A listing of the claims, in which revisions to the claims are presented, begins on page 2 of this paper; and

Remarks start at page 6 of this paper.

Doc Code: ECOMM.AUTH/ECOMM.WTDW
Doc Description: Internet Communications Authorized/Internet Communications Authorization Withdrawn

PTO/SB/439 (11-15)

AUTHORIZATION FOR INTERNET COMMUNICATIONS IN A PATENT APPLICATION OR REQUEST TO WITHDRAW AUTHORIZATION FOR INTERNET COMMUNICATIONS		
	Application No.	15/816,983
	Filing Date	November 17, 2017
	First Named Inventor	Tony M. Pearce
	Art Unit	3673
	Examiner Name	McClure, Morgan J.
	Practitioner Docket No.	54023-3030US01

To: Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I. To authorize permission for Internet Communications.

☑ Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with the undersigned and practitioners in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via video conferencing, instant messaging, or electronic mail. I understand that a copy of these communications will be made of record in the application file. (MPEP 502.03)

II. To withdraw authorization for Internet Communications.

☐ The authorization given on _____, to the USPTO to communicate with the undersigned and any practitioner in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via Internet communications such as video conferencing, instant messaging, or electronic mail is hereby withdrawn. I understand that the withdrawal is effective when approved rather than when received.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 38581.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/brick g power/ — Signature

2020-04-07 — Date

Brick G. Power — Typed or printed name

(801) 375-6600 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Juristic entities must be represented by a patent practitioner (see 37 CFR 1.31, which is applicable to any paper filed on or after September 16, 2012, that is presented on behalf of a juristic entity, regardless of application filing date). Submit multiple forms if more than one signature is required, see below*.

☑ * Total of 1 forms are submitted.

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15816983
Filing Date	2017-11-17
First Named Inventor	Tony M. Pearce
Art Unit	3673
Examiner Name	McClure, Morgan J.
Attorney Docket Number	54023-3030US01

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20170251825	A1	2017-09-07	Pearce	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2011072022	WO	A1	2011-06-16	Otis Bed Manufacturing Company, Inc.		
	2	S6134951	JP	U	1986-03-04	Kariya et al.		X

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NON-PATENT LITERATURE DOCUMENTS Remove

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	15816983
Filing Date	2017-11-17
First Named Inventor	Tony M. Pearce
Art Unit	3673
Examiner Name	McClure, Morgan J.
Attorney Docket Number	54023-3030US01

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	EUROPEAN PATENT OFFICE as INTERNATIONAL SEARCHING AUTHORITY, International Search Report and Written Opinion, International application no. PCT/US2018/060680, December 20, 2018	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	15816983
	Filing Date	2017-11-17
	First Named Inventor	Tony M. Pearce
	Art Unit	3673
	Examiner Name	McClure, Morgan J.
	Attorney Docket Number	54023-3030US01

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/brick g power/	Date (YYYY-MM-DD)	2020-04-07
Name/Print	Brick G. Power	Registration Number	38581

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
Larson, James
Durham Jones & Pinegar
3301 Thanksgiving Way, Suite 400
Lehi, UT 84043
ETATS-UNIS D'AMERIQUE

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 54023-3030WOU1	Date of mailing *(day/month/year)* 4 January 2019 (04-01-2019) **FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US2018/060680	International filing date *(day/month/year)* 13 November 2018 (13-11-2018)
Applicant PURPLE INNOVATION, LLC	

1. [X] The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

   How? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Fascimile No.: (41-22) 338.82.70

   For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 - 9.011.

2. [ ] The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. [ ] **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   [ ] the protest together with the decision thereon has been transmitted to the International Bureau together with any applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   [ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may **submit comments on an informal basis on the written opinion of the International Searching Authority** to the International Bureau. These comments will be made available to the public after international publication. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established.

   Shortly after the expiration of **18 months from the priority date, the international application will be published** by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for **entry into the national phase** before those designated Offices. In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months. For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

   Within **22 months from the priority date, the applicant may request that a supplementary international search be carried out** by a different International Searching Authority that offers this service (Rule 45*bis*.1). The procedure for requesting supplemsntary international search is described in the *PCT Applicant's Guide*, International Phase, paragraphs 8.006-8.032.

Name and mailing address of the International Searching Authority European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040 Fax: (+31-70) 340-3016	Authorized officer PERRIN, Maggie Tel: +31 (0)70 340-3452

Form PCT/ISA/220 (July 2017)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
54023-3030WOU1		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US2018/060660	13 November 2018 (13-11-2018)	17 November 2017 (17-11-2017)
Applicant		
PURPLE INNOVATION, LLC		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
   a. With regard to the **language**, the international search was carried out on the basis of:
      [X] the international application in the language in which it was filed
      [ ] a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).
   c. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title**,
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,
   a. the figure of the **drawings** to be published with the abstract is Figure No. 2
      [X] as suggested by the applicant
      [ ] as selected by this Authority, because the applicant failed to suggest a figure
      [ ] as selected by this Authority, because this figure better characterizes the invention
   b. [ ] none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2018/060680

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47C27/00 A47C27/05 A47C27/06 A47C27/14 A47C27/15
A47C7/00 A47C11/00
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47C

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2011/072022 A1 (OTIS BED MFG COMPANY INC [US]; ROMA JOHN K [US]) 16 June 2011 (2011-06-16)	1-9,13
Y	paragraphs [0002], [0029], [0030], [0032]; figures 2,3,6	10-12, 14,15
X	US 8 434 748 B1 (PEARCE TONY M [US] ET AL) 7 May 2013 (2013-05-07)	1,2,5, 7-9,12, 13
Y	column 7, line 61 - column 8, line 6; figures 1-7	12
Y	US 2017/251825 A1 (PEARCE TONY M [US]) 7 September 2017 (2017-09-07) paragraphs [0036], [0052]; figures 3-5	12
Y	JP S61 34951 U (-) 4 March 1986 (1986-03-04) figure 2	10,11, 14,15

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 December 2018	04/01/2019

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Pössinger, Tobias

2

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2018/060680

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2011072022 A1	16-06-2011	NONE	
US 8434748 B1	07-05-2013	NONE	
US 2017251825 A1	07-09-2017	AU 2017228982 A1	20-09-2018
		CA 3016700 A1	14-09-2017
		CN 108778063 A	09-11-2018
		EP 3426102 A1	16-01-2019
		TW 201800038 A	01-01-2018
		US 2017251825 A1	07-09-2017
		WO 2017155819 A1	14-09-2017
JP S6134951 U	04-03-1986	NONE	

Information on Search Strategy - Pilot phase (see OJ 2015, A86)
The type of information contained in this sheet may change during the pilot for improving the usefulness of this new service.

Application Number
PCT/US2018/060680

TITLE: MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

APPLICANT: PURPLE INNOVATION, LLC

IPC CLASSIFICATION: A47C27/00, A47C27/05, A47C27/06, A47C27/14, A47C27/15, A47C7/00, A47C11/00

EXAMINER: Pössinger, Tobias

CONSULTED DATABASES: DOSYS, EPODOC, WPI

CLASSIFICATION SYMBOLS DEFINING EXTENT OF THE SEARCH:

IPC:

CPC: A47C27/05/LOW, A47C27/064, A47C27/146, A47C27/148, A47C27/15, A47C27/001

FI/F-TERMS:

KEYWORDS OR OTHER ELEMENTS FEATURING THE INVENTION:
Foam base, side and upper layers around a double pocketed coil spring layer and an upper elastomeric layer having around 15 - 32 percent % of the total thickness in a common cover.

EPO FORM P9AA12

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2018/060680	13.11.2018	17.11.2017

International Patent Classification (IPC) or both national classification and IPC
INV. A47C27/00 A47C27/05 A47C27/06 A47C27/14 A47C27/15 A47C7/00 A47C11/00

Applicant
PURPLE INNOVATION, LLC

1. This opinion contains indications relating to the following items:

- ☑ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☑ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Fax: +31 70 340 - 3016	see form PCT/ISA/210	Pössinger, Tobias Telephone No. +31 70 340-0

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☑ the international application in the language in which it was filed.

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

   a. ☐ forming part of the international application as filed:

      ☐ in the form of an Annex C/ST.25 text file.

      ☐ on paper or in the form of an image file.

   b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

   c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

      ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

      ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	3, 5, 7-12, 14, 15
	No:	Claims	1, 2, 4, 6, 13
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-15
Industrial applicability (IA)	Yes:	Claims	1-15
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

1 Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1 WO 2011/072022 A1 (OTIS BED MFG COMPANY INC [US]; ROMA JOHN K [US]) 16 June 2011 (2011-06-16)

D2 US 8 434 748 B1 (PEARCE TONY M [US] ET AL) 7 May 2013 (2013-05-07)

D3 US 2017/251825 A1 (PEARCE TONY M [US]) 7 September 2017 (2017-09-07)

D4 JP S61 34951 U (-) 4 March 1986 (1986-03-04)

1.1 Independent claims 1, 13

Document D1 discloses, in the words of claim 1 at hand, but the references in parentheses applying to D1, see Fig. 2:

A mattress assembly (10), comprising:

a base layer (26);

a coil layer (16) disposed over the base layer (26), the coil layer (16) comprising a plurality of pocketed (24) coils (22);

an upper layer (32) disposed over the coil layer (16); and

an elastomeric cushioning element (34, [0002]) disposed over the upper layer, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches (5.08 cm) to about 4.5 inches (11.43 cm) (thickness of 2, 3 or 4 inches, see [0032]).

Document D1 further discloses, in the words of claim 13 at hand, but the references in parentheses applying to D1, see Fig. 2:

A method of forming a mattress assembly (10), comprising:

disposing a coil layer (16; 6 inches, [0029]; compare also Fig. 2, 3 for dimensions/ directions) over a base layer (26; 2 inches, [0029]);

disposing an upper layer (32; 1.5 inches, [0029]) over the coil layer (16);

disposing an elastomeric cushioning element (34; 2, 3 or 4 inches, [0032]) over the upper layer (32), wherein a thickness of the elastomeric cushioning element (34) comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly (10); and

disposing an outer covering (20) over at least the upper layer (32).

The subject-matter of claims 1, 13 is therefore not novel in the sense of Article 33(2) PCT. Consequently, the present application does not meet the criteria of Article 33(1) PCT.

1.2 Dependent claims

Dependent claims 2-12, 14, 15 do not appear to contain with regard to D1-D4 any additional features which, in combination with the features of any claim to which they refer, meet the requirements of novelty in the sense of Article 33(2) PCT, and/or meet the requirements of inventive step in the sense of Article 33(3) PCT. The reasons are as follows:

The subject-matter of claims 2, 6 is not novel, the subject-matter of claims 3, 5, 9 is not not inventive: see e.g. coil layer (16; 6 inches, [0029]; compare also Fig. 2, 3 for dimensions/directions) and elastomeric cushioning element (34; 4 inches, [0032]) in Fig. 2 of D1; the person skilled in the art would regard it as a normal design option to use a slightly thicker coil layer or to use slightly thinner base/upper layers for providing more support to a user (D1, [0002]). Furthermore, it would be obvious for the skilled worker to use polyurethane as a foam material also for base and upper layers (D1, [0032]).

The subject-matter of claim 4 is not novel, the subject-matter of claims 7, 8 is not not inventive: see e.g. side panels (28, 30) and outer covering (20). For alternative, obvious fixing methods of the upper cushion (14) and the elastomeric cushioning element (34), respectively, see e.g. D1, [0029], [0030], D2, Fig. 7, col. 7, l. 61 - col. 8, l. 6.

The subject-matter of claims 10, 11, 14, 15 is not inventive: the features of the foresaid claims are no more than a mere aggregation of features generating no synergistic effect and known in the prior art; see e.g. first (B, C) and second (D, E) casings for each coil (A) in Fig. 2 of D4.

The subject-matter of claim 12 is not inventive: compare alternative, well known cushioning elements of D2, D3.

2 Re Item VII

Certain defects in the international application

2.1 Two-part form

The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT with those features known in combination from the prior art being placed in the preamble (Rule 6.3(b)(i) PCT) and the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

2.2 State of the art

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1 is not mentioned in the description, nor is this prior art identified therein.

2.3 Reference signs

The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

2.4 Units

The units of "density" employed on page 7, l. 11, 13 and on p. 14, l. 24 are not additionally expressed in terms of the units stipulated by Rule 10.1(a) PCT (metric system).

3 Re Item VIII

Certain observations on the international application

3.1 General statements

The vague and imprecise statements in the description, from p. 16, l. 5 to p. 18, l. 8, imply that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in a lack of clarity of the claims (Article 6 PCT) when the description is used to interpret the claims (see Guidelines F-IV, 4.4). These statements should therefore be amended, either by removing or by replacing with an expression such as "the invention as defined in the appended claims".

3.2 Reference documents

The patent specification should, regarding the essential features of the invention, be self contained, i. e. capable of being understood without reference to any other document. Therefore, the expressions (similar to) "which is hereby fully incorporated by reference herein" on p. 7, l. 6, 17 and on p. 9, l. 9, 19 should be deleted from the description.

Possible steps after receipt of the international search report (ISR) and written opinion of the International Searching Authority (WO/ISA)

General information

For all international applications, the competent International Searching Authority **(ISA)** will establish an international search report **(ISR)** accompanied by a written opinion of the International Searching Authority **(WO/ISA)**. The **WO/ISA** may be responded to by

- filing informal comments with the **International Bureau of WIPO (IB)** (where no demand for international preliminary examination **(demand)** is filed)
- filing amendments under Art. 19 PCT (this can be done whether or not a **demand** is filed)
- filing amendments under Art. 34 PCT and/or formal observations in response to objections raised in the **WO/ISA** (where a **demand** *is* actually filed)

This document explains these possibilities.

Filing informal comments

After receipt of the **ISR and WO/ISA**, the applicant may file informal comments on the **WO/ISA, directly with the IB** (see International Search and Preliminary Examination Guidelines 2.15). These will be communicated to the designated/elected Offices, together with the International Preliminary Report on Patentability **(IPRP)** at 30 months from the priority date.

Amending claims under Art. 19 PCT

The applicant may file **amended claims** under Art. 19 PCT, **directly with the IB** by the later of the following dates:

- 2 months from the date of mailing of the **ISR** and the **WO/ISA**
- 16 months from the priority date

However, any such amendment received by the **IB** after the expiration of the applicable time limit shall be **considered to have been received on time** by the **IB**, if it reaches it **before** the technical preparations for international publication have been completed (the 15th day prior to the date of publication, see PCT Applicant's Guide, International Phase, 9.013).

For further information, please see Rule 46 PCT as well as form PCT/ISA/220.

Please also note that, when filing amended claims under Art. 19 PCT, such amendments shall be **accompanied by a letter** identifying the amendments made and also the basis for the amendments in the application as originally filed (Rule 46.5(b) PCT). Where a **demand** is filed, failure to comply with this requirement may result in the amendments being ignored in the International Preliminary Examination Report **(IPER)**, see Rule 70.2(*c-bis*) PCT.

BNSDOCID: <XS_____20070401SCK_1_>

Filing a demand for international preliminary examination

In principle, the **WO/ISA** will be considered to be the written opinion of the International Preliminary Examining Authority (**IPEA**). Where the **WO/ISA** issued by the **EPO** as **ISA** gives a positive opinion on the international application and the invention to which it relates, filing a **demand** with the **EPO** as **IPEA** would normally be unnecessary, since a positive IPRP would anyway be established by the IB based on the WO/ISA (see also further below).

If the applicant wishes to file a **demand** (for example, to allow him to argue his case in international preliminary examination with regard to objections raised in a negative **WO/ISA** before the **IPEA** issues an **IPER**), this must be done before expiration of **3 months after the date of mailing of the ISR and WO/ISA** or **22 months after priority date,** whichever expires later (Rule 54*bis* PCT). Amendments under Art. 34 PCT can be filed with the IPEA, normally at the same time as filing the demand (Rule 66.1(b) PCT) or within the time limit set for reply to any written opinion issued during international preliminary examination by the **IPEA**.

If a **demand** is filed at the **EPO** as **IPEA** and no comments/amendments have been received by the time the **EPO** starts drawing up the **IPER** (Rule 66.4*bis* PCT), the **WO/ISA** will be transformed by the **IPEA** into an **IPER** (also called the **IPRP (Chapter II)** which would merely reflect the content of the **WO/ISA** (OJ 10/2011, 532). The **demand** can still be withdrawn (Art. 37 PCT).

Please also note that, when filing amendments under Art. 34 PCT, such amendments shall be accompanied by a letter which identifies the amendments made and also the basis for the amendments in the application as originally filed (Rule 66.8(a) PCT). Failure to comply with this requirement may result in the amendments being ignored in the **IPER (IPRP (Chapter II))**, see Rule 70.2(*c-bis*) PCT.

Filing a request for supplementary international search

The applicant may, with the **IB**, file a request for **supplementary international search** under Rule 45*bis*.1 PCT. The present **ISR** and **WO/ISA** may also be taken into account in the execution of that supplementary international search, provided that these are available to the Authority charged with this task before it starts the supplementary search (Rule 45*bis*.5 PCT).

This kind of request **cannot be filed specifying the ISA** who did the **international search**.

More information on this topic can be found in the **PCT Applicant's Guide**, Chapter 8 (http://www.wipo.int/pct/en/guide/ip08.html).

End of the international phase

Where no **demand** is filed, at the end of the international phase, the **IB** will transform the **WO/ISA** into the IPRP (PCT Chapter I) (Rule 44*bis* PCT), which will then be transmitted together with possible informal comments to the designated Offices. Where a demand is filed, the **WO/ISA** is not transformed into an **IPRP (Chapter I)** by the **IB**, but rather the **IPEA** will establish an **IPER**, (the IPER is the same as the IPRP (PCT Chapter II), see Rule 70.15 PCT).

BNSDOCID: <XS_____3007940190K_1_>

[Document Name]Abstract
[Abstract]
[Purpose]To provide a polycarbonate laminated plate excellent in scratch resistance against frosted glass, for a walking bridge or a waist plate of a building or a variety of partitions.
[Constitution]This polycarbonate laminated plate is obtained by forming a layer obtained by adding 5 to 30 pts. wt. of glass fine particles having a particle diameter of 10 to 100 μ m to 100 pts. wt. of polycarbonate resin on at least one side of a polycarbonate plate and having ? 50% optical diffusion transmittance.
[Effect of the invention]Since the present invention has a large diffusion transmittance and a frosted glass appearance, and is excellent in scratch resistance, it is extremely suitable for use as a material for a waist plate, a blinding plate, a partition plate, and the like, since it is excellent in the abrasion resistance.
[Selected drawing]Nothing

⑲日本国特許庁（JP）　⑪実用新案出願公開

⑫公開実用新案公報（U）　昭61－34951

⑤Int.Cl.⁴	識別記号	庁内整理番号	㊸公開 昭和61年(1986)3月4日
A 47 C 27/07		7309－3B	

審査請求 未請求 （全 頁）

㊹考案の名称　マットレス用スプリング構体

㉑実　願 昭59－119067
㉒出　願 昭59(1984)7月31日

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㉕出願人　アイシン精機株式会社　刈谷市朝日町2丁目1番地

SNSDOCID: <JP_____3610349S1U__I_>

明　　細　　書

1. 考案の名称

マットレス用スプリング構体

2. 実用新案登録請求の範囲

布、不織布その他の自由に立体になじみ易い部材で造られた上下一対のシートを縫合または溶着して縦列並列しなる筒袋列において、一方のシートが平面状で他方のシートをたるませてなる筒袋列で、かつ平面状になる側のシートの材料を他方のシートに比較し剛さを持った材料で構成した筒袋列内にポケットコイル列を封入し、矩形平板状に構成したスプリング体の上下面の外周に枠線をコイルスプリング及び筒袋へ同時に固定することにより取りつけたマットレス用スプリング体。

3. 考案の詳細な説明

〔考案の目的〕

本考案は、マットレス用スプリング構体に関するものである。

〔従来技術〕

従来のマットレス用スプリング構体は、実開昭

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５７－２０１２６１号公報に開示されている。すなわち、第２図に示すように、コイルスプリングＡを内封した包袋Ｂの相隣接部を縫合して縦列並立してなる包袋列Ｃを、相隣接部が縫合または溶着されて縦列並立してなる筒袋列Ｄに封入してマットレス用スプリング体Ｅが形成されている。

（考案が解決しようとする問題点）

ところが、上下面共同一硬さであるため、特に夏季における身体への密着感の強いこの種のスプリング体においては寝苦さがあった。

それ故に、本考案は、上下面の硬さが異なるマットレス用スプリング構体を提供することを、技術的課題とすることである。

〔考案の構成〕

（問題点を解決するための手段）

前記技術的課題を解決するために講じた技術的手段は、布、不織布その他の自由に立体になじみ易い部材で造られた上下一対のシートを縫合または溶着して縦列並列しなる筒袋列において、一方のシートが平面状で他方のシートをたるませてな

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BNSDOCID: <JP_____3610349510U_1_>

る筒袋列で、かつ平面状になる側のシートの材料を他方のシートに比較し剛さを持った材料で構成した筒袋列内にポケットコイル列を封入し、矩形平板状に構成したスプリング体の上下面の外周に枠線をコイルスプリング及び筒袋へ同時に固定することによりスプリング構体を構成したことである。

（作用）

かくして、マットレスのバネ受材や詰物を変更することなく、マットレスの上下面の硬さを異ならしめることができる。

（実施例）

第1図においてコイルスプリング1は包袋列2の中に封入されポケットコイル列3を構成している。布、不織布等による筒袋材4は平面状に、また筒袋材5は筒袋材4に対し一定ピッチで筒袋を形成するようたるませて、一定間隔で上下に筒袋4，5を縫製又は溶着により接合され縦列並立してなる筒袋列6を構成する。ポケットコイル列3は前記筒袋列6の各筒袋内にそれぞれで封入され

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BNSDOCID: <JP_____3810344951U__I_>

平板状のスプリング体を形成する。このスプリング体の上下面の外周に鋼線により造られた枠線7を配置し、ボウリング8によりコイルスプリング1、包袋列2、筒袋材3，4を同時に固定してスプリング構体を構成する。

なお、筒袋材4は筒袋材5に比較し、剛さのある材質を使用している。しかして、スプリング構体の下面側のクッション性はポケットコイル列3が筒袋材5により完全に分離された如く連結されているため、身体の形状にフイットするように各コイルスプリング袋が独立してたわむことができる。またスプリング構体の上面側については、筒袋材4が平面上に構成されているため、体量が相隣接する筒袋列6内の各ポケットスプリング列に分散されるため、下面側に比較し、クッションが硬く感じられ身体へのフイット度合も軽減される。本考案においては筒袋材5より筒袋材4の方が剛い材料を使用し外周を枠線7に固定しているため上面側の体重分散効果はさらに強化される。

〔効果〕

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本考案のスプリング構体を使用することにより、マットレスのバネ受材や詰物等を上下面それぞれ変更することなく、マットレス上下面の硬さの異なるマットレスを製作することを容易にするものである。

4. 図面の簡単な説明

第1図は本考案に係るスプリング構体の斜視図、および第2図は従来のスプリング構体の斜視図である。

1…コイルスプリング，2…包袋列。

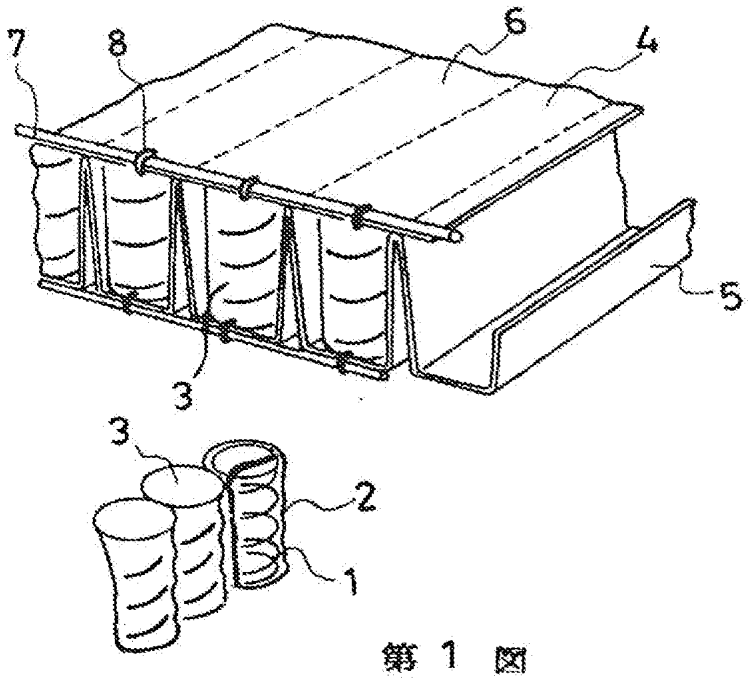
実用新案登録出願人

アイシン精機株式会社

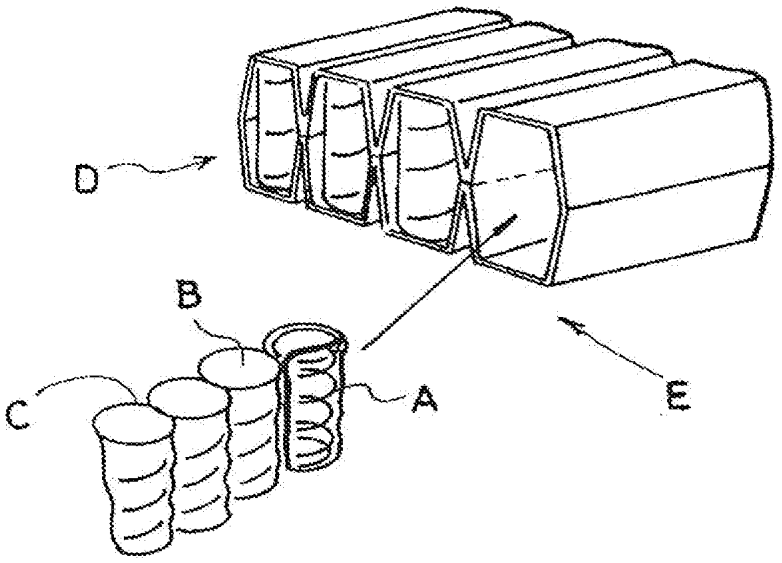
代表者 中井令夫

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第 1 図



第 2 図

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実開61-31953

出願人　アイシン精機株式会社
代表者　中　井　含　二

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BNSDOCID: <JP_____3610349510__L>

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[Continued on next page]

(54) Title: RENEWABLE MATTRESS

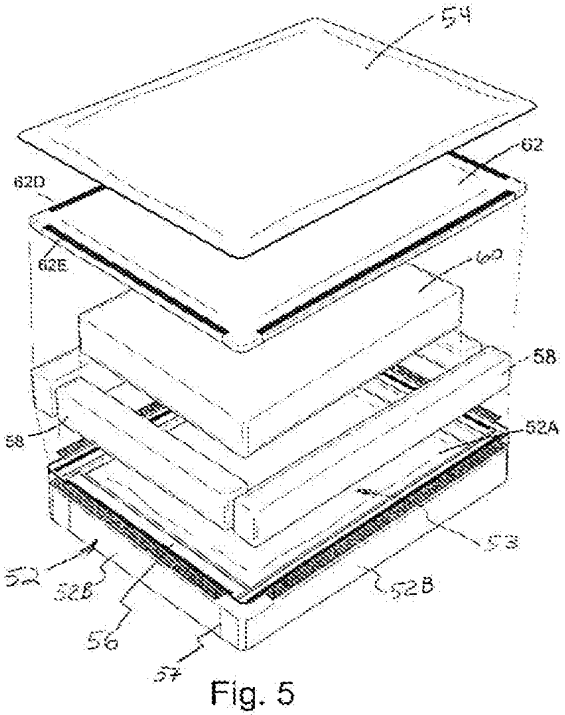


Fig. 5

(57) Abstract: A pillowtop mattress comprises a base mattress and a renewable pillowtop removably attached to the base mattress portion The base mattress includes a marshall coil assembly enclosed by a foam frame, which is encased in a stretchable fabric cover having hook-and-loop patches on its upwardly facing surface at locations that do not correspond with the shoulders or hips of the user The pillowtop includes a resilient core surrounded by a fire retardant barrier, and a cover of stretchable and launderable fabric having a zippered panel through which the resilient core and fire barrier are removably received The pillowtop cover has a plurality of hook-and-loop patches registering with the hook-and-loop patches on the base mattress cover for removably attaching the pillowtop to the base mattress The pillowtop may be renewed by detaching it from the base mattress, laundering the pillowtop cover, and replacing the spent resilient core with a new one.

WO 2011/072022 A1

BNSDOCID: <WO_____2011072022A1_1_>

SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

RENEWABLE MATTRESS

FIELD OF THE INVENTION

[0001] The present invention is relates generally to mattresses, and more particularly to renewable mattresses and so-called "pillowtop" mattresses.

BACKGROUND OF THE INVENTION

[0002] The mattress design referred to in the industry as a pillowtop mattress has an additional cushion or pillowtop attached to a base mattress to provide extra cushioning. To emphasize the pillow look of the mattress, the pillowtop is attached to the base mattress inboard of the edge or side border of the base mattress, giving the mattress a true "pillowtop" look. By attaching the pillowtop in this manner, the side of the mattress has an area of indention, where the bottom face of the pillowtop projects over the base mattress. The joint between the base mattress and the pillowtop is typically covered with a fabric gusset. Coil springs within the base mattress provide support for the user, while a foam layer in the pillowtop cushions the user.

[0003] As may be understood, the metal support coils have a useful lifetime that is significantly longer than the useful lifetime of the pillowtop foam layer. The foam in the pillowtop will loose its ability to provide sufficient cushioning even though the coils continue to provide good support. Consequently, despite the fact that the base mattress portion is in fine working condition, the overall pillowtop mattress becomes uncomfortable and is typically replaced by an entirely new mattress.

[0004] Most, if not all, pillowtop constructions in conventional pillowtop mattresses utilize "quilting." Quilted material usually requires a light weight fabric that does not stretch, known as "quilt backing," to carry the various layers efficiently through the quilting machine (quilting can be made with a stretchable layer of quilt backing, but this cuts production efficiency dramatically). Conventional pillowtop constructions also include a firm fabric panel over the coils of the base mattress. However, the non-stretchable quilt backing and fabric panel diminish the role of the coils in providing comfortable support, and the pillowtop portion must play a larger role in providing comfort. As a result, the foam layer of the pillowtop is subjected to

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BNSDOCID: <WO_____2011072022A1_1_>

greater loading during use, and its useful life is shortened relative to the life of the underlying coils.

[0005] Pursuant to current safety regulations, bedding must be flame resistant. Non-stretch fire barrier layers used in conventional pillowtop mattresses diminish the support function of the base mattress coils in a manner similar to the non-stretch quilt backing and fabric panel. As a result, non-stretch fire barriers also contribute to shortened pillowtop life.

[0006] Other conventional mattresses components – such as the mattress surface, the innerspring or support unit, or other support materials and structures – are also vulnerable to deterioration and failure. Due to wear and tear, components of a mattress may sag, shift, or lose form over time. These components do not necessarily wear at the same rate. As mentioned previously, foam has a shorter life span than other components, for example a coil-spring. However, the deterioration of just one component of a mattress may make a mattress uncomfortable, even though the remaining components are in perfect condition. Due to the unified structure of current conventional mattresses and pillowtop mattresses, worn components cannot be replaced individually.

SUMMARY OF THE INVENTION

[0007] The present invention provides a pillowtop mattress wherein a pillowtop portion detaches from a base mattress portion and can be completely renewed.

[0008] The base mattress includes a marshall coil assembly enclosed by a foam frame, which in turn is encased in a stretchable fabric cover. The base mattress cover includes hook-and-loop (VELCRO®) patches on its upwardly facing surface at locations that do not correspond with the shoulders or hips of the user.

[0009] The pillowtop includes a resilient core surrounded by a fire retardant envelope or barrier, and a cover of stretchable and optionally launderable fabric having a zippered panel through which the resilient core and associated fire retardant envelope are removably received. The pillowtop cover has a plurality of hook-and-loop patches on its downwardly facing surface at locations registering with the hook-and-loop patches on the base mattress cover for removably attaching the pillowtop to the base mattress.

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BNSDOCID: <WO_____2011072022A1_1_>

[0010] The design provides a longer lifetime for the resilient core of the pillowtop. Moreover, when the resilient core of the pillowtop loses substantial resiliency, the pillowtop may be renewed by detaching it from the base mattress, laundering the pillowtop cover, and replacing the spent resilient core with a new resilient core.

[0011] A second embodiment of the present invention provides for a renewable mattress wherein internal mattress components can be individually removed and renewed.

[0012] The renewable mattress is made up of several detachable components, including a fabric shell including a bottom and a plurality of peripheral walls that define a shell interior. Affixed to each of the peripheral walls is at least one fabric compartment. Each fabric compartment has at least one foam insert that can be removably received by the fabric compartment(s). Further, a support unit is removably received by the shell interior and is bounded by the compartmented foam inserts. Further, a padded topper is arranged above the at least one compartmented foam insert and the support unit. The topper is removably attached to the fabric shell and the fabric compartments. Lastly, a top cover, which is at least partially separable from the peripheral walls of the fabric shell, is attached to the peripheral walls of the fabric shell to enclose the at least one compartmented foam insert, the support unit, and the topper.

[0013] The design provides a longer lifetime of a mattress. Specifically, detachable mattress components allow for worn components to be replaced with new components, and to be laundered from time to time.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] In the drawings:

[0015] Fig. 1 is a perspective view of a renewable pillowtop mattress formed in accordance with an embodiment of the present invention, wherein a pillowtop portion is shown lifted from a base mattress portion;

[0016] Fig. 2 is a longitudinal cross-sectional view of the renewable pillowtop mattress shown in Fig. 1;

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[0017] Fig. 3 is a transverse cross-sectional view of the renewable pillowtop mattress shown in Fig. 1;

[0018] Fig. 4 is a perspective view of a renewable mattress formed in accordance with another embodiment of the present invention;

[0019] Fig. 5 is an exploded perspective view of the renewable mattress shown in Fig. 4;

[0020] Fig. 6 is a partial sectional view of the renewable mattress shown in Fig. 4;

[0021] Fig. 7 is a bottom plan view of the renewable mattress shown in Fig. 4;

[0022] Fig. 8 is an end elevational view of the renewable mattress shown in Fig. 4;

[0023] Fig. 9 is a side elevational view of the renewable mattress shown in Fig. 4;

[0024] Fig. 10 is a perspective view of the renewable mattress, partially exploded to show an underside of a padded topper of the renewable mattress;

[0025] Fig. 11 is a perspective view showing a corner portion of the renewable mattress in detail, wherein the topper and a fabric cover of the mattress are removed for sake of visibility of internal components; and

[0026] Fig. 12 is a perspective view showing a corner portion of the renewable mattress with the fabric cover partially separated from a main fabric shell of the mattress.

DETAILED DESCRIPTION OF THE INVENTION

[0027] Figs. 1-3 show a renewable pillowtop mattress 10 formed in accordance with an embodiment of the present invention. Mattress 10 generally comprises a base mattress 12 and a pillowtop 14 removably attached to base mattress 12.

[0028] Base mattress 12 includes a marshall coil assembly 16, a foam frame 18 enclosing marshall coil assembly 16, and a base mattress cover 20 surrounding the foam frame and the coil assembly. Marshall coil assembly 16 is of conventional construction and includes a plurality of metal coils 22 disposed within respective pockets of a fabric encasement 24. Alternatively, there may also be a welded frame of flat wire fastened to the underside of marshall coil assembly 16 for stability purposes.

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[0029] Foam frame 18 includes a foam base layer 26, a pair of opposed foam side walls 28 and a pair of opposed foam end walls 30 adhered to base layer 26, and a foam top layer 32 adhered to side walls 28 and end walls 30 such that foam frame 18 defines a hollow core for receiving coil assembly 16. It is advantageous to use extra-firm foam, such as 2.1 pound density, 55 ILD (Indentation Load Deflection) foam, so that base mattress returns to its original size after being rolled and vacuum-sealed for shipping. By way of non-limiting example, base layer 26 may be 2" (5.08 cm) thick; side walls 28 and end walls may be 4" (10.16 cm) thick by 6" (15.24 cm) high; and top layer 32 may be 1.5" (3.81 cm) thick convoluted foam. The constituent parts of foam frame 18 may be fixed to one another using a water-based adhesive.

[0030] Fabric encasement 24 of marshall coil assembly 16 may be adhered to the top (inner) surface of foam base layer 26 and to the bottom (inner) surface of foam top layer 32 using a water-based adhesive. The surfaces that are being fastened together with adhesive need to be coated evenly and completely; water based adhesive should not be applied excessively as glue may "pool" and form hard spots(these spots may not be immediately noticeable, but may become noticeable over time).

[0031] Base mattress cover 20 may be made from a stretchable fabric, for example Body Climate by Polartec, available from Tietex Corporation, to minimize interference with the support action of coil assembly 16. Base mattress cover 20 includes a plurality of hook-and-loop (e.g. VELCRO®) patches 21 fixed to an upwardly facing surface of cover 20 for removable attachment of pillowtop 14. Base mattress 12 may be hand-tufted, given that its thickness exceeds the capacity of standard automatic tufting machines.

[0032] Pillowtop 14 includes a resilient core 34, a stretchable fire retardant envelope 36 around resilient core 34, and a fabric pillowtop cover 38 surrounding resilient core 34 and envelope 36. Resilient core 34 is preferably a foamed latex rubber, such as 21 or 28 ILD Talalay Latex available from Latex International in Ansonia, CT, but another resilient material may be used. Resilient core 34 may be any desired thickness. It is contemplated to provide a selection of embodiments using various thicknesses for resilient core 34. For example, a selection of pillowtops wherein the resilient core 34 is 2" (5.08 cm), 3" (7.62 cm), or 4" (10.16 cm) in thickness may be provided. It is further contemplated to form resilient core 34 as a

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multi-layer composite of different materials. Multi-layer composites can be in various thicknesses, and be made by laminating varying firmness together, for instance a 3" (7.62 cm) thick core can be made from using a 1" thick layer of soft foam (15 ILD) between two 1" (2.54 cm) thick layers of firm (35 ILD) foam, or vice-versa.

[0033] Envelope 36 around resilient core 34 is made of one or more layers, including at least one layer of a stretchable knitted fire retardant fabric, such as C395 available from Milliken Corporation of Spartanburg, South Carolina. The construction of envelope 36 will depend upon the material used for resilient core 34. Where a highly flammable material is used, such as latex rubber, a multi-layer envelope may be required to meet government safety standards. Where a less flammable material is used, such as polyurethane foam, a single-layer envelope may be sufficient to meet government safety standards. Again, stretchable fabric is advantageous to minimize interference with the support function of the underlying marshall coil assembly 16, thereby reducing the occurrence of pressure points.

[0034] Fabric pillowtop cover 38 is formed of a stretchable fabric that may also be launderable. Currently, Silene II from Creative Ticking in Gastonia, North Carolina is preferred as fabric for making pillowtop cover 38, however other fabrics may be substituted without straying from the invention. Pillowtop cover 38 includes a zippered panel 40 releasably connected to the remained of the pillowtop cover 38 by a zipper 42 such that pillowtop cover 38 may be opened to an extent allowing resilient core 34 and fire retardant envelope 36 to be removed and replaced with a new resilient core and fire retardant envelope. Zipper 42 may extend completely around the periphery of panel 40, or around a portion of the periphery of panel 40. For aesthetic reasons, panel 40 and zipper 42 are preferably provided on a downwardly facing surface of pillowtop cover 38, such that zipper 42 is offset from the outside edge of the pillowtop cover and is not visible when mattress 10 is in its assembled state ready for use. Because the actual zipper teeth are set on strips of non-stretch fabric coupled to the stretchable fabric of pillowtop cover 32, it is preferable to provide a slightly oversized length of zipper 42, represented in Fig. 1 by the wavy appearance of zipper 42, in order to prevent inconsistency in the support and cushioning characteristics of mattress 10 which might result in an annoying feel to the user above zipper 42.

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[0035] Pillowtop cover 38 further includes a plurality of hook-and-loop (i.e. VELCRO®) patches 39 fixed to a downwardly facing surface of pillowtop cover 38 and arranged to register with patches 21 on base mattress cover 20 to removably attach pillowtop 14 to base mattress 12. Patches 21 and 39 may be located away from areas directly under the shoulders or hips of a user, so that lack of uniformity is less likely to be noticed by the user. In one arrangement, loop "landing target" patches 21 on the base mattress cover 20 are at least 2" (5.08 cm) wider and longer than the corresponding hook patches 39 on the underside of pillowtop cover 38. This is to reduce the fastening strength, so that when the pillowtop is removed, the fabric covers will not be damaged. The larger size of the loop landing target also prevents the hook target from "hooking" the outer base mattress fabric and damaging it. In a preferred arrangement, patches 21 on the base mattress cover 20 are hook patches and patches 39 on the pillowtop cover 38 are loop patches to allow for increased launderability of the pillowtop cover 38.

[0036] As may be understood from the foregoing description, pillowtop 14 is completely renewable without need to replace base mattress 12. Pillowtop 14 may be detached from base mattress 12, panel 40 may be unzipped and opened to allow removal of a spent resilient core 34 and fire retardant envelope 36, and the empty pillowtop cover 38 may be laundered if the fabric is launderable. A completely new resilient core 34 having a new or reconditioned fire retardant envelope 36 may be inserted into laundered pillowtop cover 38 through opened panel 40, which may then be zipped closed. The renewed pillowtop 14 may then be reattached to base mattress 12 using patches 21 and 39. It is also conceivable to possess more multiple pillowtops having different cushioning characteristics, and to change pillowtops based on the desired cushioning characteristic.

[0037] The mattress of the present invention also allows the load of a user's weight to be shared more evenly between the pillowtop core and the coil springs, thereby extending the cushioning life of the pillowtop.

[0038] Figs. 4-12 depict a renewable mattress 50 having removable internal components in accordance with a second embodiment of the present invention.

[0039] A perspective view of assembled renewable mattress 50 is shown in Fig. 4 and an exploded view of mattress 50 is shown in Fig. 5. Renewable mattress 50

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generally comprises a fabric shell 52 and a top cover 54, which are at least partially separable from one another to allow access to removable internal mattress components as described below. The top cover may be separable from the fabric shell 52 via a zipper 55. Fig. 12 depicts top cover 54 partially unzipped from fabric shell 52 via zipper 55. Fabric shell 52 includes a bottom 52A and a plurality of peripheral walls 52B defining a shell interior 53. Zipper 55 may extend completely or almost completely around the periphery of top cover 54 and fabric shell 52. If zipper 55 does not extend completely around the periphery, then a relatively short segment of cover 54 may be permanently sewn to a peripheral wall 52B of fabric shell 52 and the remaining periphery of cover 54 may be connected to walls 52B by zipper 53. Fabric shell 52 further includes a plurality of fabric flaps affixed to an upper portion of peripheral walls 52B, wherein each flap 52C has a fastener element 52D affixed thereto facing shell interior 53. Fabric shell 52 may also include an outwardly projecting lip 52E around the perimeter of the fabric shell 52, more particularly around an upper exterior portion of shell walls 52B. Fabric shell 52 may be a decorative fabric laminated to a 0.8 ounce per square foot of fire retardant rayon material. The current preferred material for the fabric shell 52 is Panda Suede, style number 436548, from Milliken Corporation of Spartanburg, South Carolina. Top cover 54 may be a filled stretch knit highloft decorative fabric, with about 3/8 to a 1/2 inch thickness. Currently, CT0085 sold by Beverly Knits, Inc. of Gastonia, NC is the preferred material for the top cover 54.

[0040] Fig. 5 is an exploded view showing the various components of the renewable mattress 50. In the illustrated embodiment, four fabric compartments 56 are arranged in shell interior 53 and affixed to bottom 52A and peripheral walls 52B by stitching 57. Although the embodiment depicted in Figs. 4-12 includes four fabric compartments 56, it is contemplated that a different number of fabric compartments may be used, including a single fabric compartment that extends around the entire border of fabric shell 52. Each fabric compartment 56 includes a zipper 56A for opening and closing the compartment, thereby enabling each compartment 56 to removably receive a foam insert 58. Each fabric compartment 56 may also include a fastener element 56B affixed to an upwardly facing surface of the compartment for

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use in removably attaching a padded topper 62 over the compartments as described below.

[0041] For safety purposes, it is preferable for each foam insert 58 to be enclosed by fire retardant material 59. However, instead of or in addition to foam inserts 58 being enclosed by fire retardant material, the fabric compartments 56 may be made of fire retardant material, or fire retardant material may be affixed to the fabric compartments 56. The foam inserts 58 may be made of extra-firm foam, such as 2.1 pound density, 55 ILD (Indentation Load Deflection) foam, to provide a supportive framework for mattress 50.

[0042] Renewable mattress 50 further comprises a support unit 60 arranged to fit centrally in shell interior 53 within space defined by surrounding fabric compartments 56 and inserts 58. As depicted in Fig. 11, support unit 60 may be the same height as fabric compartments 56 such that the support unit 60 and fabric compartments 56 form a substantially planar surface to support padded topper 62. Support unit 60 comprises a resilient support core 60A, for example one or more pieces of foam and/or foamed latex rubber, or a coil-spring support such as a conventional marshall coil assembly, and an envelope 60B of stretchable fire retardant material surrounding support core 60A. It is further contemplated to form resilient core 60A as a multi-layer composite of different materials. Multi-layer composites can be made by laminating layers of varying firmness together, for instance a layer of soft foam (15 ILD) may be arranged between two layers of firm (35 ILD) foam, or vice-versa.

[0043] Padded topper 62 is constructed to rest on top of the fabric compartments 56 and the support unit 60 below top cover 54. Padded topper 62 includes a resilient core 62A, and a stretchable fire retardant envelope 62B around resilient core 62A. Fig. 6 is a cross-section cutout of the assembled renewable mattress 50 where the interrelation of the top cover 54, fabric compartments 56, support unit 60, and padded topper 62 may be seen. As best seen in Fig. 10, an underside of padded topper 62 includes a plurality of downwardly facing fastener elements 62C affixed to envelope 62B for mating with upwardly facing fastener elements 56B on fabric compartments 56. A top side of padded topper 62 includes a plurality of upwardly facing fastener elements 62D affixed to envelope 62B for mating with fastener elements 52D on flaps 52C on fabric shell 52 when flaps 52C are wrapped around the side edges of padded

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topper 62. While the illustrated embodiment includes four flaps 52C on fabric shell 52, any number of flaps 52C may be used, including one continuous flap that surrounds the periphery of fabric shell 52. It is also contemplated that fastener elements 62C and 62D may alternatively be attached to a flexible fastener attachment piece 62E. Flexible fastener attachment pieces 62E may wrap around the edges of padded topper 62 and affixed to envelope 62B by gluing, stitching, or tufting. Additionally, it is contemplated that attachment piece 62E may instead be affixed to or through resilient core 62A by stitching or tufting.

[0044] The various fastener elements 52D, 56B, 62C, and 62D may be, for example, a strip of hook or loop material (e.g. VELCRO® material) for mating with a corresponding loop or hook material, as the case may be. Other types of fastener elements are possible, including without limitation adhesive fastener elements, snap fastener elements, strap elements, and/or clip elements. The fastener elements may be formed of a fire retardant material and may be affixed in place by gluing, stitching, or tufting.

[0045] An assembled renewable mattress 50 may be dissembled by first unzipping the fabric shell 52 from the top cover 54 via zipper 55 to reveal the top of padded topper 62. Next, fabric shell 52 should be unfastened from padded topper 62 by unfastening fastener elements 62D from 52D. Padded topper 62 may then be unfastened and removed from fabric compartments 56 by unfastening fastener elements 62C from 56B. Following the removal of the padded topper 62, the support unit 60 may be removed. Once the padded topper 62 is detached, foam inserts 58 may be removed from the fabric compartments 56 by unzipping zipper 56A. By repetition of the foregoing steps in the reverse order, the renewable mattress 50 may be reassembled.

[0046] Modifications and other embodiments of the invention set forth herein will be apparent to one skilled in the art to which the invention pertains in light of teachings presented in the present specification. Therefore, the invention is not to be limited to the specific embodiments disclosed, and modifications and other embodiments are intended to be included.

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PARTS LIST

[0047]	10	Renewable pillowtop mattress
[0048]	12	Base mattress
[0049]	14	Pillowtop
[0050]	16	Marshall coil assembly
[0051]	18	Foam frame
[0052]	20	Base mattress cover
[0053]	21	Hook-and-loop patches on base mattress cover 20
[0054]	22	Metal coils
[0055]	24	Fabric encasement
[0056]	26	Base layer of foam frame 18
[0057]	28	Side walls of foam frame 18
[0058]	30	End walls of foam frame 18
[0059]	32	Top layer of foam frame 18
[0060]	34	Resilient core
[0061]	36	Fire retardant envelope
[0062]	38	Pillowtop cover
[0063]	39	Hook-and-loop patches on pillowtop cover 38
[0064]	40	Panel in pillowtop cover 38
[0065]	42	Panel zipper
[0066]	50	Renewable mattress
[0067]	52	Fabric shell
[0068]	52A	Fabric shell bottom
[0069]	52B	Fabric shell walls
[0070]	52C	Fabric shell flap
[0071]	52D	Fabric shell fastener
[0072]	52E	Outwardly projecting lip
[0073]	53	Interior space of fabric shell
[0074]	54	Top cover
[0075]	55	Zipper
[0076]	56	Fabric compartment
[0077]	56A	Fabric compartment zipper

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[0078]	56B	Fabric compartment fastener
[0079]	57	Stitching
[0080]	58	Foam insert
[0081]	59	Fire retardant envelope
[0082]	60	Support unit
[0083]	60A	Support core
[0084]	60B	Fire retardant envelope
[0085]	62	Padded topper
[0086]	62A	Resilient core
[0087]	62B	Fire retardant envelope
[0088]	62C	Downwardly facing fastener
[0089]	62D	Upwardly facing fastener
[0090]	62E	Flexible fastener attachment piece

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WHAT IS CLAIMED IS:

1. A renewable mattress, comprising:

a fabric shell including a bottom and a plurality of peripheral walls defining a shell interior;

at least one fabric compartment arranged in the shell interior and affixed to the peripheral walls of the shell;

at least one foam insert removably received by the at least one fabric compartment;

a support unit removably received by the shell interior and bounded by the compartmented foam inserts;

a padded topper arranged above the at least one compartmented foam insert and the support unit, the topper being removably attached to the fabric shell; and

a top cover attached to the peripheral walls of the fabric shell and cooperating with the fabric shell to enclose the at least one compartmented foam insert, the support unit, and the topper, wherein the top cover is at least partially separable from the peripheral walls of the fabric shell.

2. The renewable mattress of claim 1, wherein the at least one fabric compartment comprises a plurality of fabric compartments, and the at least one foam insert comprises a plurality of foam inserts respectively received by the plurality of fabric compartments.

3. The renewable mattress of claim 2, wherein each of the fabric compartments has a zipper to open and close the fabric compartment.

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4. The renewable mattress of claim 2, wherein each of the fabric compartments includes an upwardly facing fastener element and the padded topper includes a plurality of downwardly facing fastener elements arranged to mate with the upwardly facing fastener elements on the fabric compartments for detachably securing the removable topper to the fabric compartments.

5. The renewable mattress of claim 4, wherein the peripheral walls of the fabric shell include one or more flaps each having a fastener element thereon, and the padded topper includes a plurality of upwardly facing fastener elements arranged to mate with the fastener elements on the flaps for detachably securing the removable topper to the fabric shell.

6. The renewable mattress of claim 1, wherein the top cover is attached to the peripheral walls of the fabric shell by a zipper.

7. The renewable mattress of claim 4, wherein the fastener elements arranged to mate with one another are hook and loop fastener elements.

8. The renewable mattress of claim 5, wherein the fastener elements arranged to mate with one another are hook and loop fastener elements..

9. The renewable mattress of claim 1, wherein the renewable mattress comprises four fabric compartments.

10. The renewable mattress of claim 1, wherein the removable topper includes an outer cover of fire retardant material.

11. The renewable mattress of claim 1, wherein the fabric compartments are formed of fire retardant material.

12. The renewable mattress of claim 1, wherein the removable support unit includes an outer encasement of fire retardant material.

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13. The renewable mattress of claim 1, wherein the peripheral walls include an outwardly projecting lip around the entire fabric shell.

14. The renewable mattress of claim 1, wherein the support unit comprises at least one foam cushion.

15. The renewable mattress of claim 1, wherein the top cover is fully separable from the peripheral walls of the fabric shell.

16. A renewable mattress comprising:

a base mattress including a foam frame, a coil assembly enclosed by the foam frame, and a cover made of stretchable fabric surrounding the foam frame; and

a pillowtop including a resilient core, a fire retardant envelope enclosing the resilient core, and a pillowtop cover surrounding the fire retardant envelope;

wherein the pillowtop is removably attached to the base mattress.

17. The renewable mattress of claim 16, wherein the pillowtop comprises one or more downwardly facing fasteners and the base mattress comprises one or more upwardly facing fasteners to mate with the downwardly facing fasteners for removably attaching the pillowtop to the base mattress.

18. The renewable mattress of claim 17, wherein the pillowtop comprises a periphery and a longitudinal axis that bisects the pillowtop and the base comprises a periphery and a longitudinal axis that bisects the base;

wherein the downwardly facing fasteners are affixed between the periphery of the pillowtop and the longitudinal axis that bisects the pillowtop and the upwardly facing fasteners are affixed between the periphery of the base and the longitudinal axis that bisects the base

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19. The renewable mattress of claim 16, wherein the pillowtop cover comprises a zippered panel such that the zippered panel may be unzipped to allow the pillowtop cover to be removed from the fire retardant envelope.

20. The renewable mattress of claim 20, wherein the pillowtop cover comprises material adjacent to the zippered panel and the zippered panel comprises a zipper having a length, the zipper length being oversized relative to the material adjacent to the zippered panel.

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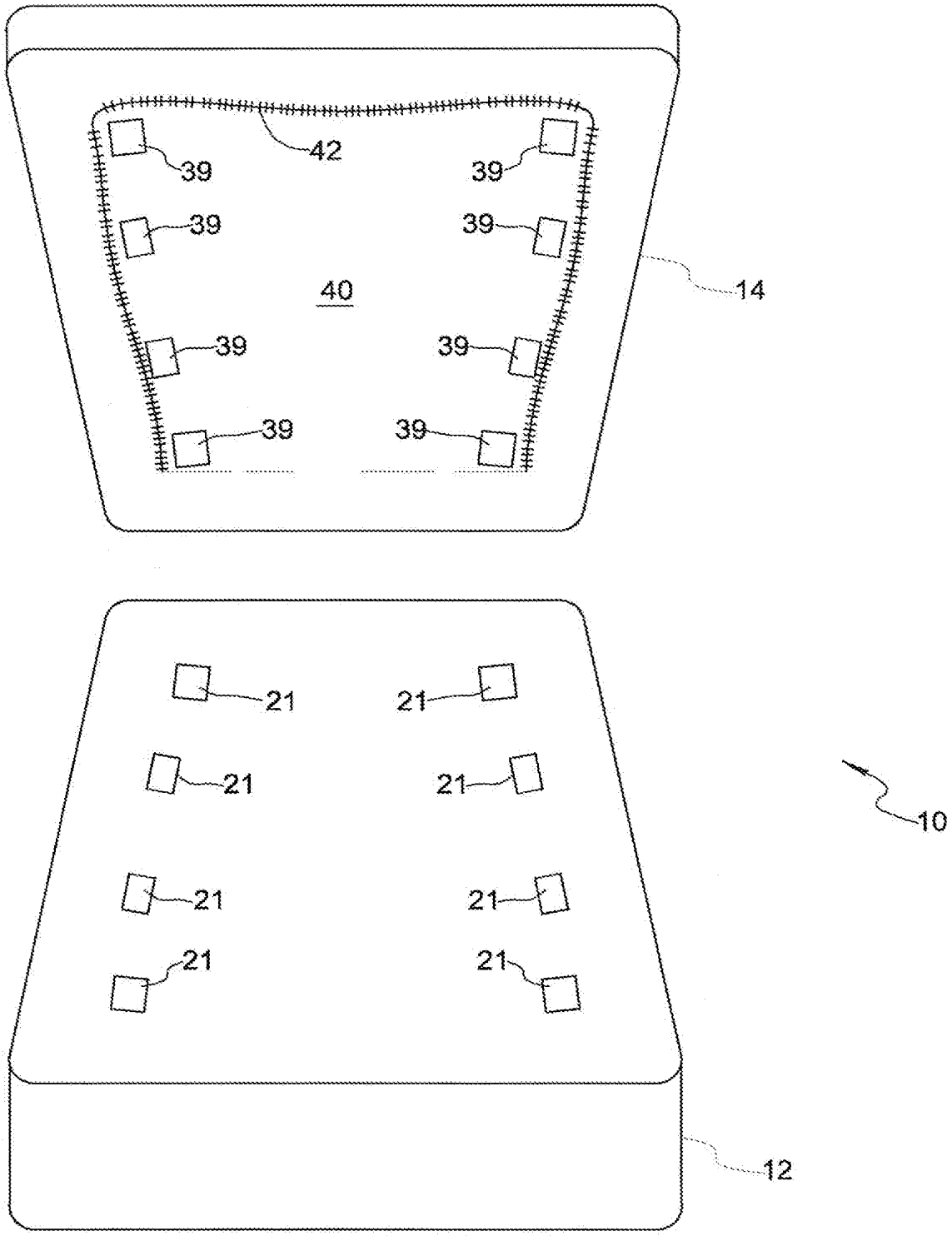


Fig. 1

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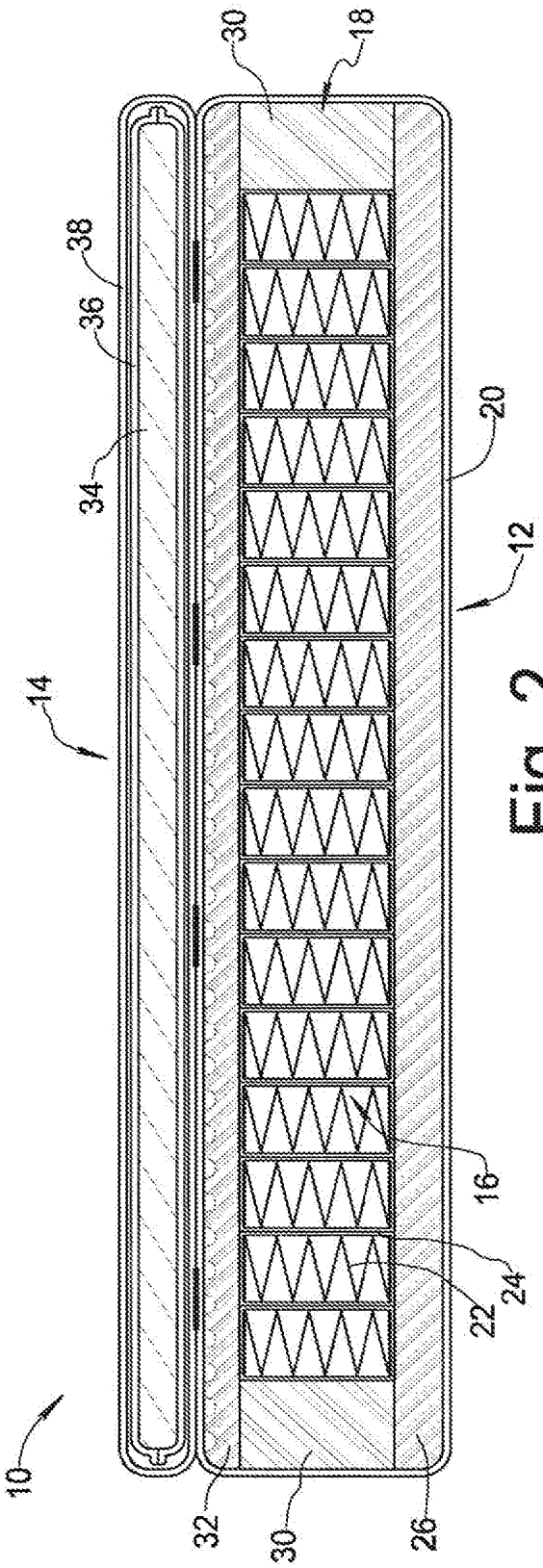


Fig. 2

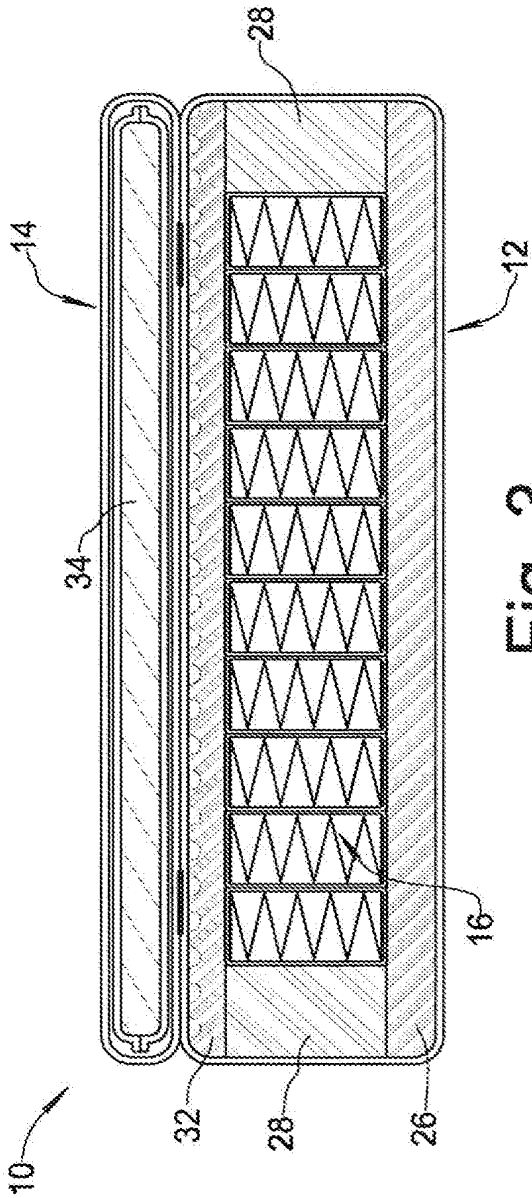


Fig. 3

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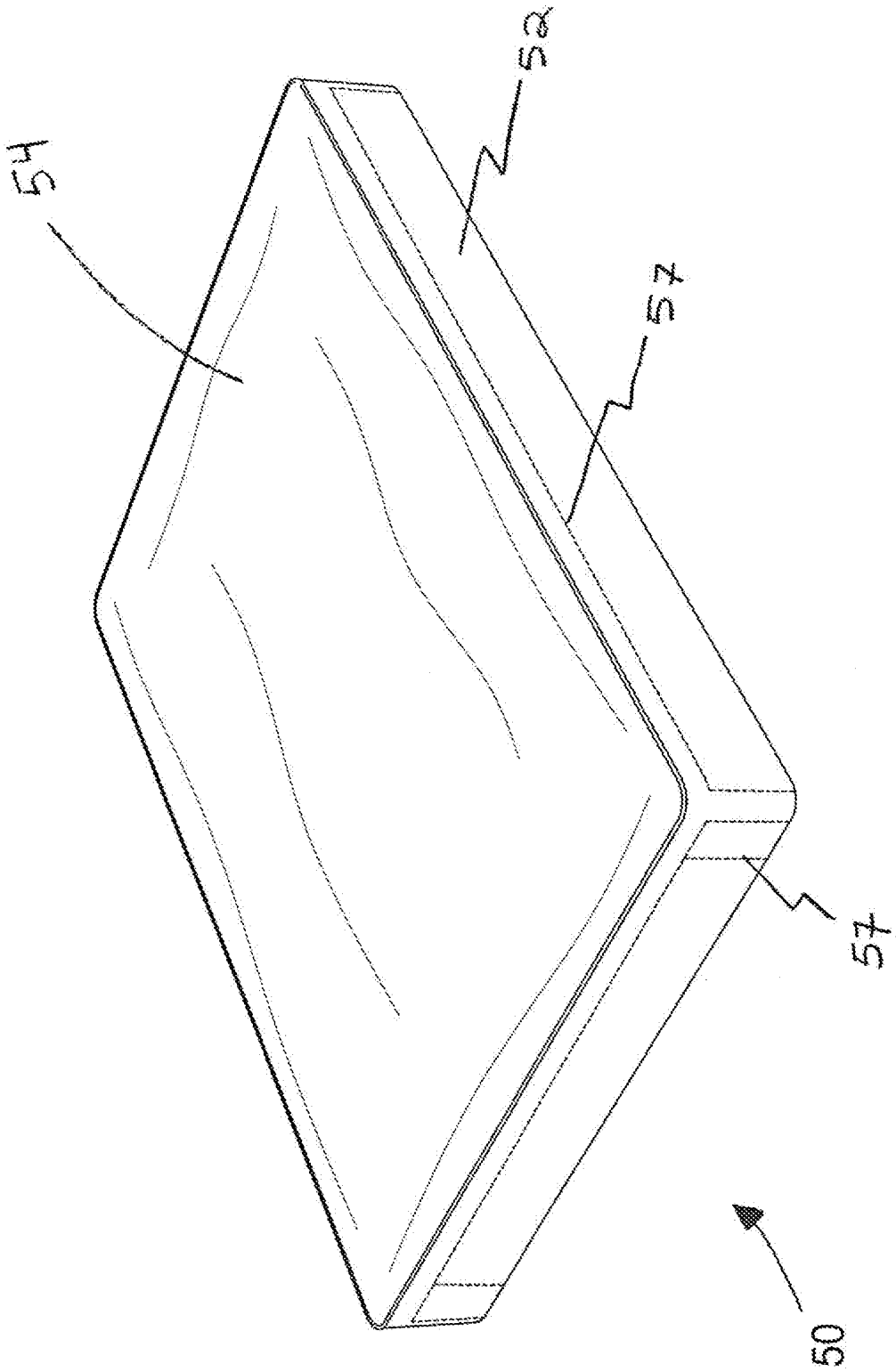


Fig. 4

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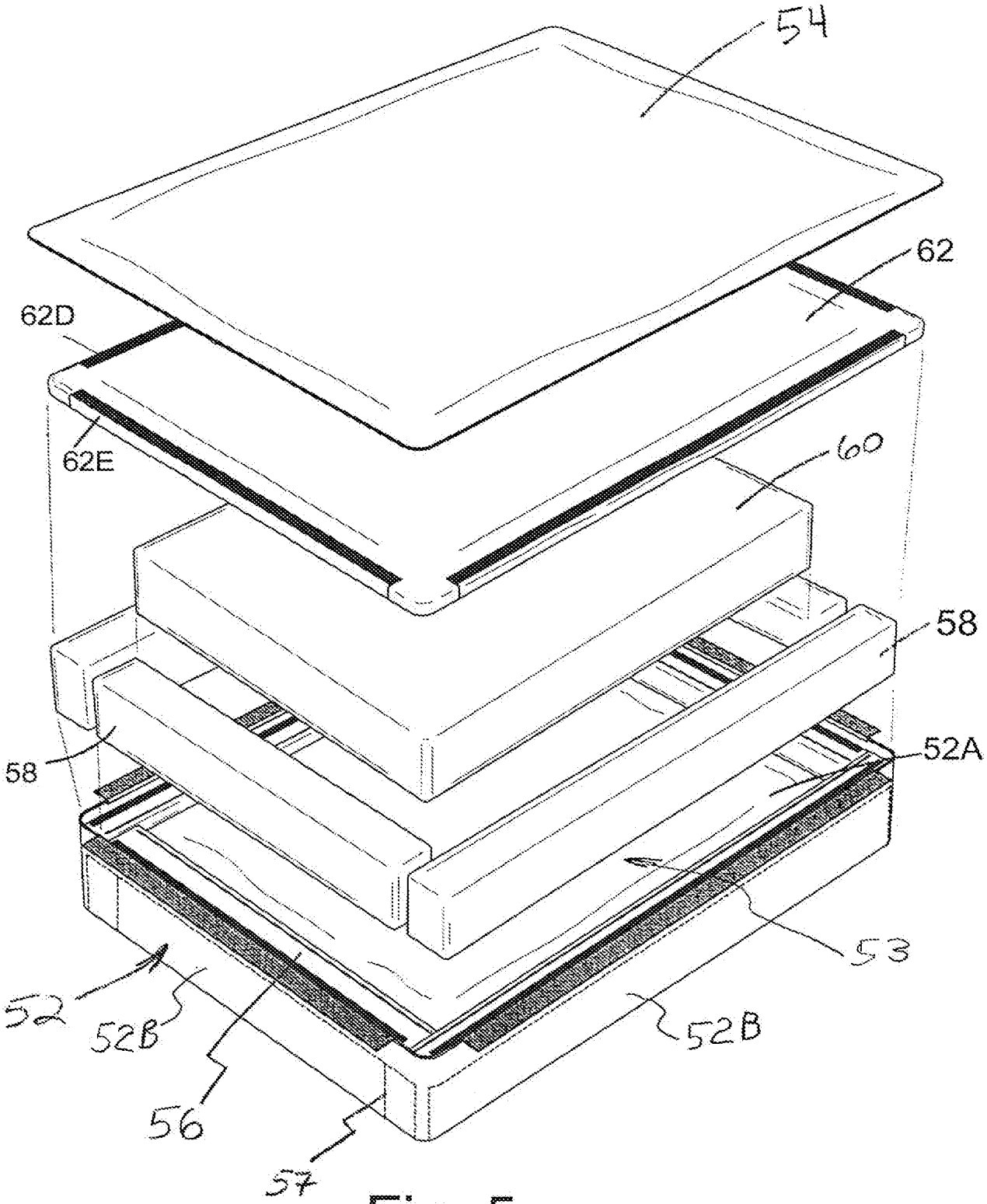


Fig. 5

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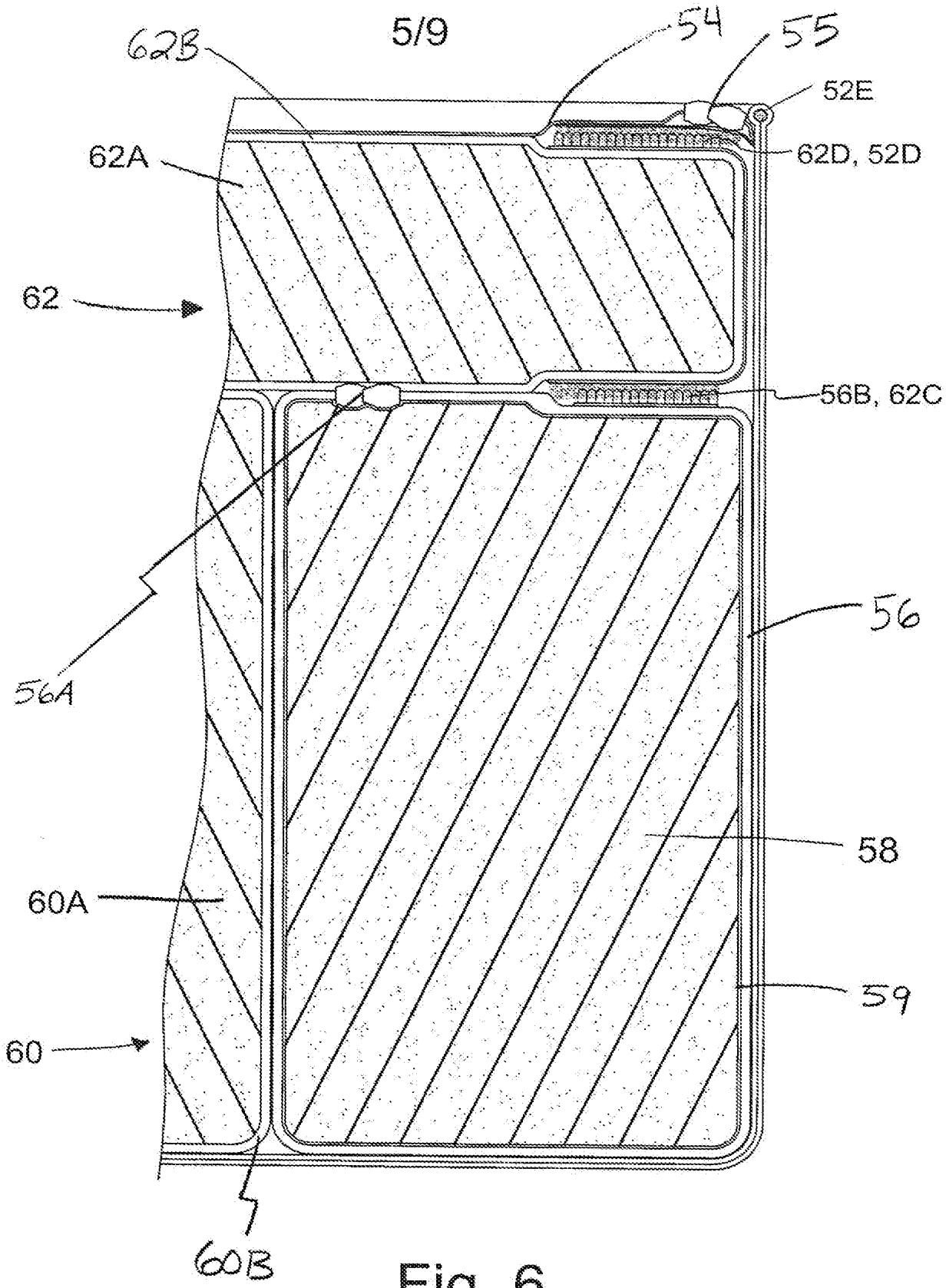


Fig. 6

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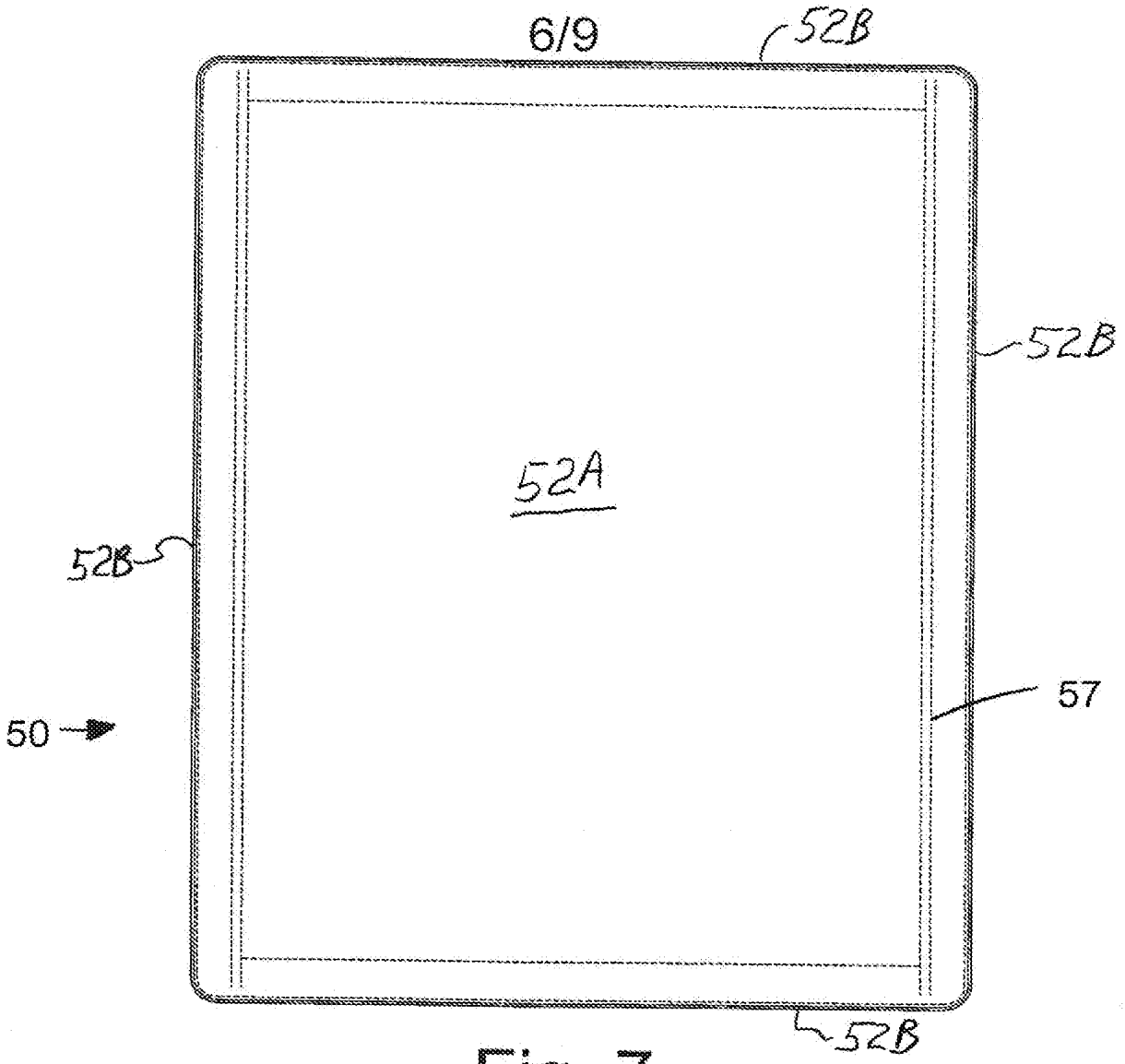


Fig. 7

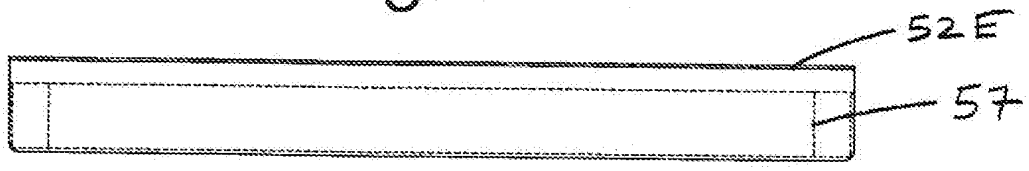


Fig. 8

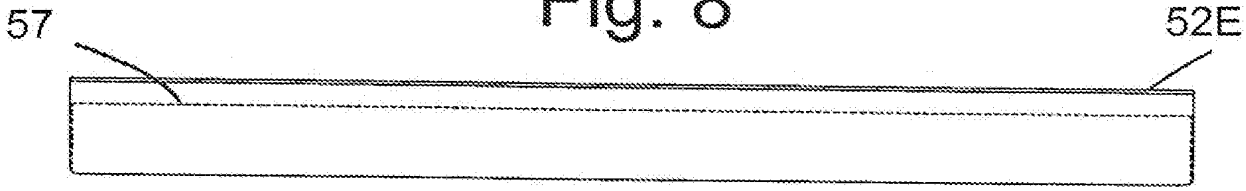


Fig. 9

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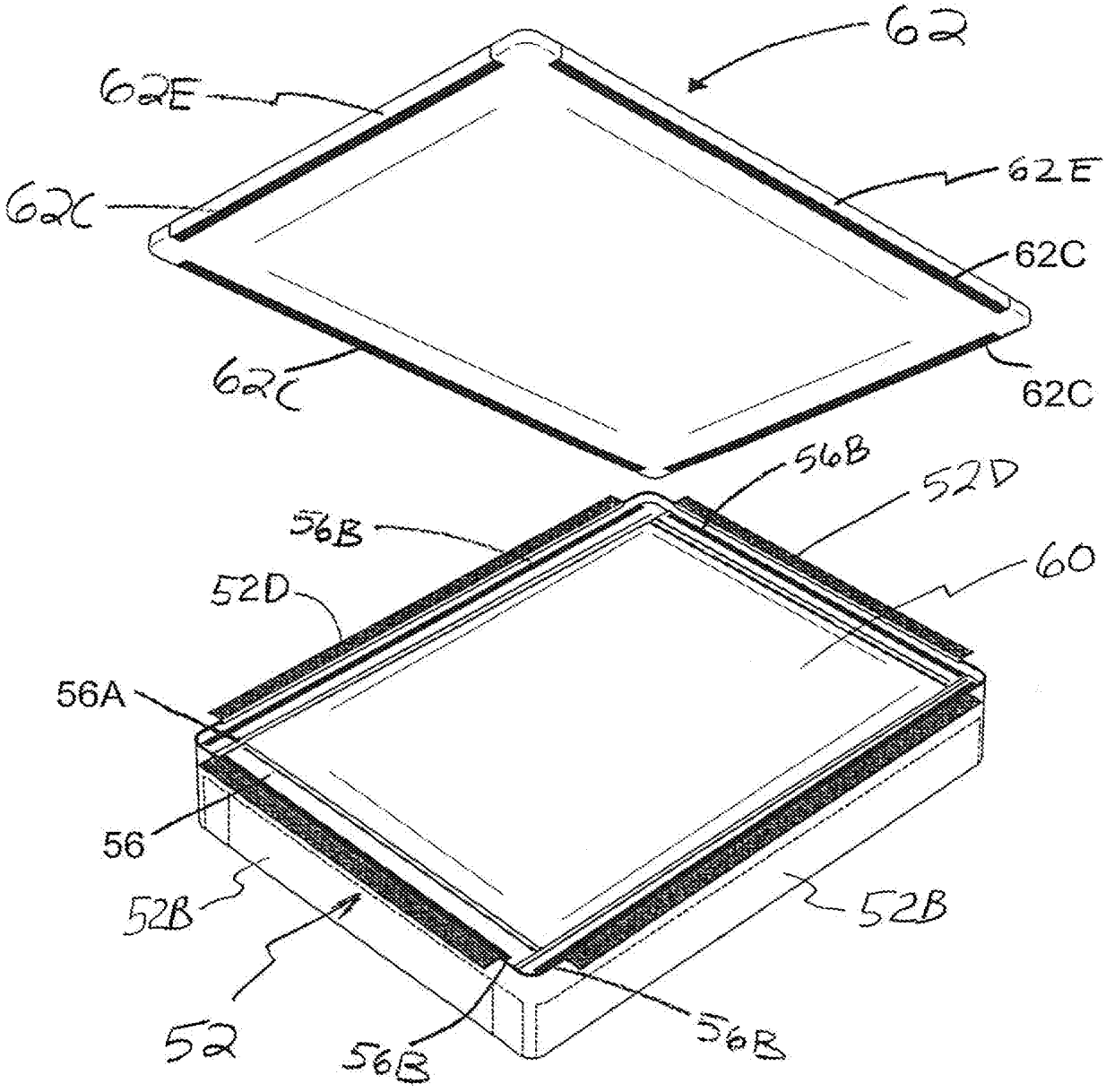


Fig. 10

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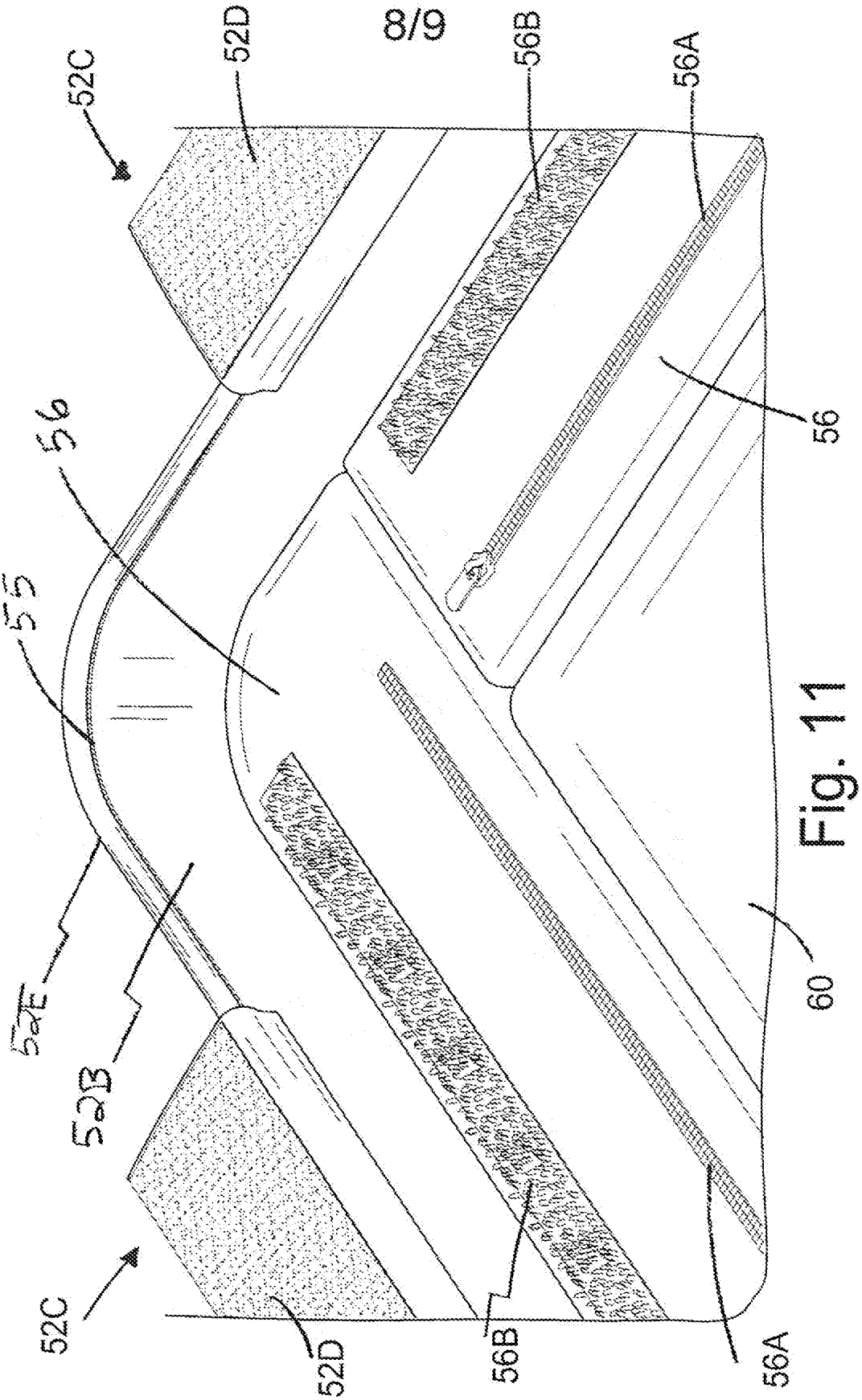


Fig. 11

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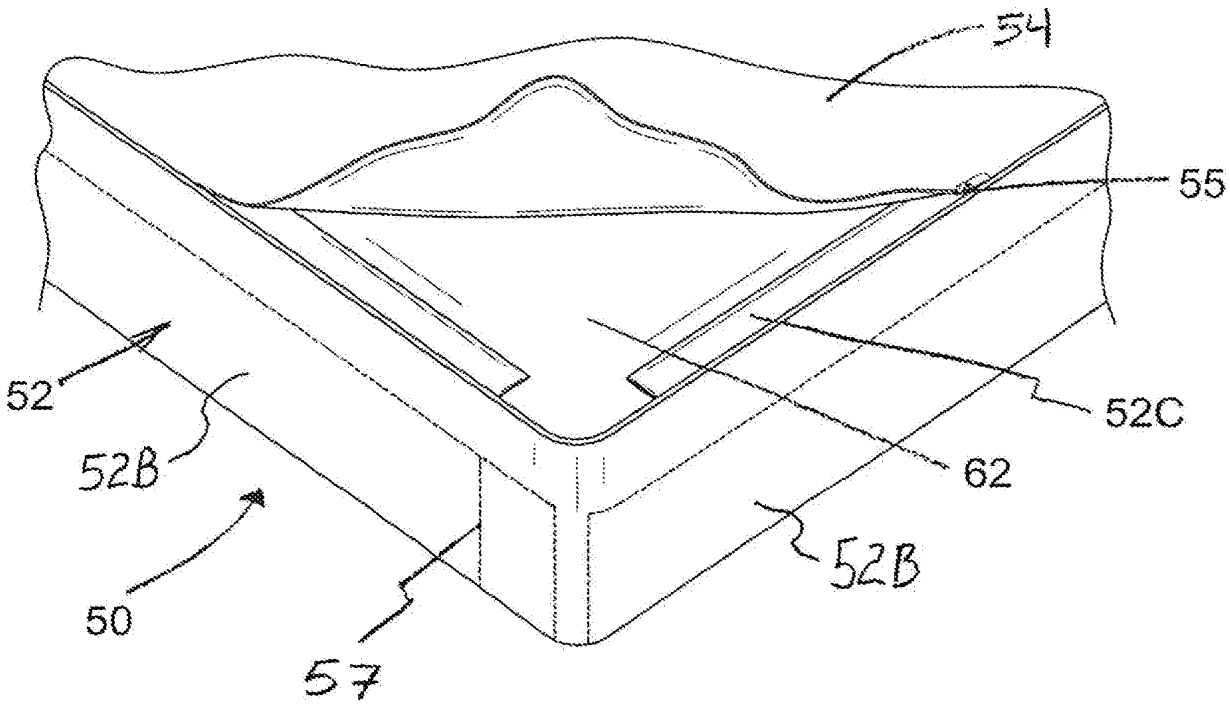


Fig. 12

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2010/059479

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A47C 27/14 (2011.01)
USPC - 5/706
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - A47C 27/00, 27/14 (2011.01)
USPC - 5/706, 922

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
ECLA Class/Subclass(es): A47C 27/00T6 (2011.01)

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4,449,261 A (MAGNUSSON) 22 May 1984 (22.05.1984) entire document	1-20
Y	US 2007/0067916 A1 (POSTON) 29 March 2007 (29.03.2007) entire document	1-20
Y	US 2008/0263774 A1 (LEE) 30 October 2008 (30.10.2008) entire document	5, 8, 14

☐ Further documents are listed in the continuation of Box C. ☐

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

Date of the actual completion of the international search	Date of mailing of the international search report
20 January 2011	08 FEB 2011
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

BNSDOCID: <WO_____2011072022A1_1_>

Electronic Patent Application Fee Transmittal

Application Number:	15816983
Filing Date:	17-Nov-2017
Title of Invention:	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
First Named Inventor/Applicant Name:	Tony M. Pearce
Filer:	Brick Glenn Power/stacia pentz-boren
Attorney Docket Number:	54023-3030US01

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	240	240
		Total in USD ($)		**240**

Electronic Acknowledgement Receipt

EFS ID:	39091639
Application Number:	15816983
International Application Number:	
Confirmation Number:	9411
Title of Invention:	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
First Named Inventor/Applicant Name:	Tony M. Pearce
Customer Number:	128128
Filer:	Brick Glenn Power/stacia pentz-boren
Filer Authorized By:	Brick Glenn Power
Attorney Docket Number:	54023-3030US01
Receipt Date:	07-APR-2020
Filing Date:	17-NOV-2017
Time Stamp:	19:34:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$240
RAM confirmation Number	E202047J34558406
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2020-04-07-RespToOA-54023-3030USU1.pdf	525226 dba77051134078876bd34502c666b5c6e6620409	yes	12
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Applicant Arguments/Remarks Made in an Amendment		6	12	
	Claims		2	5	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
Warnings:					
Information:					
2	Internet Communications Authorized	2020-07-04-InternetCommunication-54023-3030USU1.pdf	75272 b996e39f5b5bdcac28333354a04d579356ceae94	no	2
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	2020-04-07-IDS-54023-3030US1.PDF	612237 f87a592d9db27797e94432850a1179117ce69e75	no	4
Warnings:					
Information:					
4	Non Patent Literature	2019-01-04-SRandWO-PCTUS2018-060680.PDF	4053003 a155662ec0dde093cdbf8f256de5b5163992b001	no	14
Warnings:					
Information:					
5	Foreign Reference	JPS61-34951withEnglishAbstract.PDF	1362920 97662db5254d6f075395e6d1d7904c9f0e52157a	no	8

Warnings:					
Information:					
6	Foreign Reference	WO2011-072022A1.PDF	6971474 c29f1342fccb06a5b5e335394ab395f2b107f903	no	28
Warnings:					
Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	30867 3eb10a91b045c7ac24cd0ae9795d439ba59f495e	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	13630999		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE CLAIMS

1. (Currently amended) A mattress assembly, comprising:

a base layer;

a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils;

an upper layer disposed over the coil layer; ~~and~~

an elastomeric cushioning element disposed over the upper ~~layer, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches~~layer;

a stabilization layer secured to a bottom of the elastomeric cushioning element, an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer; and

an outer covering encasing the base layer, the coil layer, the upper layer, the stabilization layer, and the elastomeric cushioning element.

2. (Currently amended) The mattress assembly of claim 1, ~~wherein~~ wherein:

the coil layer has a thickness ~~within a range~~ of about 6.00 inches ~~and~~ to about 8.00 inches; and

the elastomeric cushioning element has a thickness of about 2.0 inches to about 4.5 inches.

3. (Currently amended) The mattress assembly of claim 2, ~~wherein~~ wherein:

the coil layer has a thickness of about 7.50 inches; and

the elastomeric cushioning element has a thickness of about 4.0 inches.

4. (Currently amended) The mattress assembly of claim 1, further comprising:

one or more side panels extending around outer perimeters of the base layer and the upper ~~layer, and an~~ layer, the outer covering ~~disposed over the upper layer at least partially around~~ also encasing the one or more side panels.

5. (Original) The mattress assembly of claim 1, wherein the base layer and the upper layer both comprise a polyurethane foam.

6. (Currently amended) The mattress assembly of claim 1, wherein the ~~elastomeric cushioning element has a thickness of about 4.0 inches~~ stabilization layer provides a slip-resistant surface against the upper layer.

7. (Currently amended) The mattress assembly of claim 1, ~~further comprising an adhesive disposed between the elastomeric cushioning element and~~ wherein the stabilization layer is secured to the upper layer.

8. (Currently amended) The mattress assembly of claim 7, wherein the ~~adhesive comprises a latex water-based adhesive~~stabilization layer is adhesively secured to the upper layer.

9. (Currently amended) The mattress assembly of claim 1, wherein the base layer has a thickness ~~within a range~~ of about 0.75 inches ~~and~~ to about 1.50 ~~inches, and wherein~~ inches and the upper layer has a thickness ~~within a range~~ of about 0.25 inches ~~and~~ to about 0.75 inches.

10. (Currently amended) A mattress assembly, comprising:

a base layer;

a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils,

each pocketed coil of the plurality of pocketed coils ~~comprises~~comprising:

a plurality of nested casings; and

a single coil disposed within an innermost casting of the plurality of nested casings;

an upper layer disposed over the coil layer; and

at least one elastomeric cushioning element disposed over the upper ~~layer, wherein the at least one elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches~~layer;

a stabilization layer on a bottom surface of the at least one elastomeric cushioning element, an elastomeric material of the at least one elastomeric cushioning element seeping through the stabilization layer; and

an outer covering encasing the base layer, the coil layer, the upper layer, the stabilization layer, and the at least one elastomeric cushioning element.

11. (Original) The mattress assembly of claim 10, wherein the plurality of pocketed coils are oriented next to each other in a grid pattern.

12. (Currently amended) The mattress assembly of claim 10, wherein the plurality of nested casings of each pocketed coil comprises:

a first casing; and

a single second casing disposed within the first casing, ~~wherein~~ with the single coil ~~is~~ being disposed within the second casing.

13. (Original) The mattress assembly of claim 10, wherein the at least one elastomeric cushioning element comprises a plurality of distinct elastomeric cushioning elements disposed at different locations over the upper layer.

14. (Currently amended) The mattress assembly of claim 10, wherein the at least one elastomeric cushioning element ~~does not cover an entirety~~ covers a portion of an upper surface of the upper layer.

15. (Currently amended) The mattress assembly of claim 11, wherein the at least one elastomeric cushioning element comprises a grid of interconnected ~~buckling~~ walls defining hollow buckling columns.

16. (Currently amended) A method of forming a mattress assembly, comprising:

disposing a coil layer over a base layer;

disposing an upper layer over the coil layer;

disposing an elastomeric cushioning element over the upper layer~~, wherein a thickness of the elastomeric cushioning element comprises between about 15.6% and about 32.0% of an overall thickness of the mattress assembly~~ including bringing a stabilization layer into contact with the upper layer, the stabilization layer being located on a bottom surface of the elastomeric cushioning element, an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer; and

~~disposing an outer covering over at least~~ encasing the base layer, the coil layer, the upper layer, the stabilization layer, and the elastomeric cushioning element in an outer casing.

17. (Currently amended) The method of claim 16, ~~wherein disposing a coil layer over a base core layer comprise~~further comprising:

individually disposing ~~a plurality of coils~~ each coil of the coil layer within a ~~plurality of casings, wherein each coil of the plurality of coils is disposed within at least two respective casings~~first casing; and

individually disposing the ~~plurality of coils over the coil layer~~first casing within a second casing.

18. (Currently amended) The method of claim 17, wherein individually disposing ~~a plurality of coils~~ each coil of the coil layer within ~~a plurality of casings~~ the first casing comprises individually disposing the ~~plurality of coils~~ coil within ~~polypropylene bags~~a polypropylene bag.

19. (Currently amended) The method of ~~claim 16~~claim 18, wherein ~~the elastomeric cushioning element comprises about 30.8% of the overall thickness of the mattress assembly~~individually disposing the first casing within the second casing comprises individually disposing the first casing within a polypropylene bag.

20. (Currently amended) The method of claim 16, further ~~comprising~~ comprising: ~~disposing an adhesive between the elastomeric cushioning element and~~ securing the stabilization layer to the upper layer.

REMARKS

The Office Action of January 7, 2020, has been received and considered.

Claims 1-20 are currently pending in the above-captioned application. The Office has considered claims 1-20 and has rejected each of these claims.

Claims 1-4, 6-10, 12, and 14-20 have been revised. The amendments to these claims are made without prejudice or disclaimer.

Reconsideration of the application is respectfully requested.

Rejections under 35 U.S.C. § 103

The Office has rejected claims 1-20 under 35 U.S.C. § 103.

There are several requirements for establishing a *prima facie* case of obviousness against the claims of a patent application. All of the limitations of the claim must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Even when the art teaches or suggests each and every claim element, a claim "is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR Int'l Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007). A mere conclusory statement that one of ordinary skill in the art would have been motivated to combine or modify reference teachings simply will not suffice. *KSR* at 1396. The Office must also establish that one of ordinary skill in the art would have been able to predict that the purported modification or combination of reference teachings would have been successful. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). To meet its burden, the Office must provide "some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR* at 1396, quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). The articulated reasoning must be found in the prior art or common knowledge to those of ordinary skill in the art, or be derived from the nature of the problem itself; it cannot be based upon the Applicant's disclosure or the Examiner's own hindsight analysis. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006).

Kluft in view of Gilhooly

Claims 1-6, 9, 16, and 19 have been rejected under 35 U.S.C. § 103 for being drawn to subject matter that is purportedly not patentable over teachings and/or suggestions from U.S. Patent 7,640,611 to Kluft ("Kluft"), in view of teachings and/or suggestions from U.S. Patent 4,213,214 to Gilhooly ("Gilhooly)".

Independent claim 1 is directed to a mattress assembly comprising a base layer, a coil layer, an upper layer disposed over the coil layer; and an elastomeric cushioning element disposed over the upper layer. As amended, independent claim 1 further recites that the mattress assembly comprises a stabilization layer secured to a bottom of the elastomeric cushioning element with an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer. Amended independent claim 1 also recites that the mattress assembly includes an outer covering encasing the base layer, the coil layer, the upper layer, the stabilization layer, and the elastomeric cushioning element.

Independent claim 16 is directed to a method of forming a mattress assembly. The method of independent claim 16 includes disposing a coil layer over base layer, disposing an upper layer over the coil layer, and disposing an elastomeric cushioning element over the upper layer. As amended, independent claim 16 specifies that, upon disposing the elastomeric cushioning element over the upper layer, a stabilization layer on a bottom surface of the elastomeric cushioning element is brought into contact with the upper layer. An elastomeric material of the elastomeric cushioning element seeps through the stabilization layer. The method of amended independent claim 16 also includes enclosing the base layer, the coil layer, the upper layer, the stabilization layer, and the elastomeric cushioning element in an outer covering.

Kluft teaches a mattress with a foam encasement that surrounds individually wrapped coils. Kluft, col. 3, line 59, to col. 4, line 27. Kluft also teaches placing a sheet layer 100 between the coil layer and an upper layer of the foam encasement. Kluft, col. 4, lines 56-67.

Gilhooly teaches a mattress that accommodates two or more people. Gilhooly, Abstract. More specifically, Gilhooly teaches a mattress with separate areas of preselected firmness disposed lengthwise in the mattress. *Id.* The mattress of Gilhooly may comprise elastomeric foam layers and/or sets of springs, as well as detachable fluid-filled layers. *Id.*

It is respectfully submitted that neither Kluft nor Gilhooly, either alone or in combination, teaches or suggests a stabilization layer between an elastomeric cushioning element and an upper layer that overlies as coil layer, as required by amended independent claim 1. It is also respectfully submitted that neither Kluft nor Gilhooly provides any teaching or suggestion of a method that includes disposing an elastomeric cushioning element with a stabilization layer on a bottom surface thereof on an upper layer that overlies a coil layer, as required by amended independent claim 16. Although Kluft teaches that a foam encasement may surround an array of individually wrapped coils and that a sheet layer may be disposed between the array of coils and an upper layer of the foam encasement, Kluft does not teach or suggest that a stabilization layer on a bottom surface of an elastomeric cushioning element, with an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer, may be disposed over the upper layer of the foam encasement. While Gilhooly teaches that an elastomeric cushioning element may be placed over a coil layer, Gihooly also lacks any teaching or suggestion that a stabilization layer on the bottom of the elastomeric cushioning element, with an elastomeric material of the elastomeric cushioning element seeping through the stabilization layer, may be disposed over an upper layer atop a coil layer.

Because neither Kluft nor Gilhooly teaches or suggests each and every element of amended independent claim 1 or amended independent claim 16, it is respectfully submitted that the teachings and/or suggestions of these references, as combined by the Office, cannot be relied upon to establish a *prima facie* case of obviousness against amended independent claim 1, amended independent claim 16, or any of their respective dependent claims.

For these reasons, it is respectfully submitted that claims 1-6, 9, 16, and 19 are allowable under 35 U.S.C. § 103.

Kluft, Gilhooly, and Lafleche

Claims 7, 8, and 20 have been rejected under 35 U.S.C. § 103 for being drawn to subject matter that is purportedly not patentable over teachings and/or suggestions from Kluft, in view of teachings and/or suggestions from Gilhooly, and, further, in view of teachings and/or suggestions from U.S. Patent 8,910,334 to Lafleche et al. ("Lafleche").

Claims 7 and 8 are allowable, among other reasons, for depending from independent claim 1, which is allowable.

Claim 20 is allowable, among other reasons, for depending from independent claim 20, which is allowable.

Kluft in view of McCann

Claims 10, 11, and 13-15 have been rejected under 35 U.S.C. § 103 for being drawn to subject matter that is purportedly not patentable over teachings and/or suggestions from Kluft in view of teachings and/or suggestions from U.S. Patent Application Publication 20050223667 to McCann et al. ("McCann").

Independent claim 10 is directed toward a mattress assembly comprising a base layer, a coil layer disposed over the base layer, an upper layer disposed over the coil layer, and at least one elastomeric cushioning element disposed over the upper layer. As amended, independent claim 10 further recites that a stabilization layer is on a bottom surface of the at least one elastomeric cushioning element, with an elastomeric material of the at least one elastomeric cushioning element seeping through the stabilization layer.

The teachings of Kluft are summarized above.

McCann teaches a cushioning apparatus having a plurality of intersecting columns with walls that buckle when areas of pressure are exerted thereon. McCann Abstract. The cushioning apparatus disclosed in McCann is mattress topper that may comprise a thermoplastic material, a silicone, a two-part resin, or another gel material. *Id.* The mattress topper may comprise one or more securement apparatuses to hold the mattress topper in place upon a mattress. McCann, paragraphs **[0033]** and **[0034]**.

Neither Kluft nor McCann provides any teaching or suggestion of a stabilization layer on a bottom surface of the cushioning element of the mattress topper, let alone that a material of the cushioning element seeps through such a stabilization layer.

Moreover, neither Kluft nor Gilhooly provides any teaching or suggestion of an outer covering that encases *both* a coil layer and an elastomeric cushioning element. As the Office has acknowledged, Kluft does not provide any teaching or suggestion of an elastomeric cushioning element (Office Action of January 7, 2020, pages 2-3), so Kluft could not teach or suggest

encasement of an elastomeric cushioning element within an outer covering along with the coil layer taught by Kluft. Although McCann teaches an elastomeric cushioning element, the elastomeric cushioning element of McCann is part of a mattress topper that is made to be assembled with a separate mattress. Thus, McCann also lacks any teaching or suggestion of an outer covering that encases *both* an elastomeric cushioning element and a coil layer.

Since Kluft and McCann, as combined by the Office, do not teach or suggest each and every element of amended independent claim 10, it is respectfully submitted that the teachings and/or suggestions of these references, as combined by the Office, cannot be relied upon to establish a *prima facie* case of obviousness against amended independent claim 10, as would be needed for the Office to maintain 35 U.S.C. § 103 rejections of independent claim 10 and its dependent claims.

It is, therefore, respectfully submitted that claims 10, 11, and 13-15 are allowable under 35 U.S.C. § 103.

Kluft, McCann, and An

Claim 12 has been rejected under 35 U.S.C. § 103 for being drawn to subject matter that is purportedly not patentable over teachings and/or suggestions from Kluft, in view of teachings and/or suggestions from McCann, and, further, in view of teachings and/or suggestions from U.S. Patent 7,757,322 to An ("An").

Claim 12 is allowable, among other reasons, for depending from independent claim 10, which is allowable.

Kluft, Gilhooly, and An

Claims 17 and 18 have been rejected under 35 U.S.C. § 103 for being drawn to subject matter that is purportedly not patentable over teachings and/or suggestions from Kluft, in view of teachings and/or suggestions from Gilhooly, and, further, in view of teachings and/or suggestions from An.

Claims 17 and 18 are allowable, among other reasons, for depending from independent claim 16, which is allowable.

In view of the foregoing, withdrawal of the 35 U.S.C. § 103 rejections of claims 1-20 is respectfully requested, as is the allowance of each of these claims.

CONCLUSION

It is respectfully submitted that each of claims 1-20 is allowable. An early notice of the allowability of each of these claims is respectfully solicited. If any issues preventing allowance of the above-captioned application remain, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,

/brick g power/

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Date: April 7, 2020
BGP/skp

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/816,983	Filing Date 11/17/2017	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $80 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $420 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	04/07/2020	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 19	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/SHARAIN E MORELAND/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/816,983	11/17/2017	Tony M. Pearce	54023-3030US01	9411

128128 7590 01/07/2020

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EXAMINER	
MCCLURE, MORGAN J	

ART UNIT	PAPER NUMBER
3673	

NOTIFICATION DATE	DELIVERY MODE
01/07/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

apower@djplaw.com
ipmail@djplaw.com
sboren@djplaw.com

Office Action Summary	Application No. 15/816,983	Applicant(s) Pearce et al.	
	Examiner MORGAN J MCCLURE	Art Unit 3673	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-20 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-20 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 12/13/2017 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 1-6, 9, 16, and 19 is/are rejected under 35 U.S.C. 103 as being unpatentable over Kluft (US Patent 7640611) in view of Gilhooly (US Patent 4213214).

   a. Regarding claim 1, Kluft teaches a mattress assembly, comprising: a base layer (Figure 2; 60 (the portion under the springs 156)); a coil layer (Figure 2; 156) disposed over the base layer, the coil layer comprising a plurality of pocketed coils (Figure 2; 156, shows pockets around the coils); an upper layer (Figure 2; 102) disposed over the coil layer; and a cushioning element (Figure 2; 106) disposed over the upper layer. Kluft does not teach the cushioning element is an elastomeric cushioning element, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning element 106 of Kluft to be between 2 and 4 inches in order to create a sufficiently soft surface according to user preference, and doing so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re

Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961). Gilhooly teaches the cushioning element is an elastomeric cushioning element (see, abstract, and Figure 5; 45). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning layer 106 of Kluft to be elastomeric as in Gilhooly in order to increase user comfort according to user preference by including resiliency in the mattress.

b. Regarding claim 2, Kluft does not specifically teach the coil layer has a thickness within a range of about 6.00 inches and about 8.00 inches. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the coil layer of Kluft to be between 6 and 8 inches in order to create a sufficiently soft yet elastic surface according to user preference, and doing so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961).

c. Regarding claim 3, Kluft does not specifically teach the coil layer has a thickness of about 7.50 inches. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the coil layer of Kluft to be 7.5 inches in order to create a sufficiently soft yet elastic surface according to user preference, and doing so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961).

d. Regarding claim 4, Kluft teaches one or more side panels extending around outer perimeters of the base layer and the upper layer (Figure 5; 124); and an outer covering (Figure 1; upper layer of layer 108 and Figure 5; 122) disposed over the upper layer at least partially around the one or more side panels.

e. Regarding claim 5, Kluft teaches the base layer (Column 3; lines 60-65) and the upper layer (Column 4; lines 57-60) both comprise a polyurethane foam.

f. Regarding claim 6, Kluft does not specifically teach the elastomeric cushioning element has a thickness of about 4.0 inches. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning element 106 of Kluft to be 4 inches in order to create a sufficiently soft surface according to user preference, and doing so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961).

g. Regarding claim 9, Kluft does not specifically teach the base layer has a thickness within a range of about 0.75 inch and about 1.50 inches, and wherein the upper layer has a thickness within a range of about 0.25 inch and about 0.75 inch. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the upper layer of Kluft to be between .25 and .75 inches and the base layer to have a thickness of between .75 and 1.5 inches in order to create a sufficiently soft surface according to user preference, and doing so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961).

h. Regarding claim 16, Kluft teaches a method of forming a mattress assembly, comprising: disposing a coil layer (Figure 2; 156) over a base layer (Figure 2; 60 (the portion under the springs 156)); disposing an upper layer (Figure 2; 102) over the coil layer; disposing an cushioning element (Figure 2; 106) over the upper layer, and disposing an outer covering over at least the upper layer (Figure 1; outermost layer of 108). Kluft does not teach the cushioning element is an elastomeric cushioning element, wherein a thickness of the elastomeric cushioning element comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning element 106 of Kluft to be between 15 and 32% of an

overall thickness of the mattress assembly in order to create a sufficiently soft surface according to user preference, and doing so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961). Gilhooly teaches the cushioning element is an elastomeric cushioning element (see, abstract, and Figure 5; 45). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning layer 106 of Kluft to be elastomeric as in Gilhooly in order to increase user comfort according to user preference by including resiliency in the mattress.

i. Regarding claim 19, Kluft does not teach the elastomeric cushioning element comprises about 30.8% of the overall thickness of the mattress assembly. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning element 106 of Kluft to be 30.8% of an overall thickness of the mattress assembly in order to create a sufficiently soft surface according to user preference, and doing so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961)

2. Claims 7, 8, and 20 is/are rejected under 35 U.S.C. 103 as being unpatentable over Kluft (US Patent 7640611) in view of Gilhooly (US Patent 4213214) further in view of Lafleche (US Patent 8910334).

j. Regarding claim 7, Kluft does not teach an adhesive disposed between the elastomeric cushioning element and the upper layer. Lafleche teaches an adhesive disposed between the elastomeric cushioning element and the upper layer (Column 3, lines 40-45). It would have been obvious to one of ordinary skill in the art to use an adhesive on the layers of Kluft and Gilhooly in order to prevent sliding of the layers in relation to each other.

k. Regarding claim 8, Lafleche does not specifically teach the adhesive comprises a latex water based adhesive. It would have been obvious to one of ordinary skill in the art to use a latex water based adhesive in order to securely bond the layers together effectively, and doing so would simply be a change in material and, the selection of a known material based upon its suitability for the intended use is a design consideration within the level of skill of one skilled in the art. In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960).

l. Regarding claim 20, Kluft does not teach disposing an adhesive between the elastomeric cushioning element and the upper layer. Lafleche teaches disposing an adhesive between the elastomeric cushioning element and the upper layer (Column 3, lines 40-45). It would have been obvious to one of ordinary skill in the art to use an adhesive on the layers of Kluft and Gilhooly in order to prevent sliding of the layers in relation to each other.

3. Claims 10, 11, and 13-15 is/are rejected under 35 U.S.C. 103 as being unpatentable over Kluft (US Patent 7640611) in view of McCann (US Patent Application Publication 20050223667).

m. Regarding claim 10, Kluft teaches a mattress assembly, comprising: a base layer (Figure 2; 60 (the portion under the springs 156)); a coil layer (Figure 2; 156) disposed over the base layer, the coil layer comprising a plurality of pocketed coils (Figure 2; 156, shows pockets around the coils); each pocketed coil of the plurality of pocketed coils comprises: a plurality of casings (Figure 1; 84); and a coil (Figure 2; 156) disposed within the plurality of casings; an upper layer (Figure 2; 102) disposed over the coil layer; and at least one cushioning element (Figure 2; 106) disposed over the upper layer. Kluft does not teach the cushioning element is an elastomeric cushioning element, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning element 106 of Kluft to be between 2 and 4 inches in order to create a sufficiently soft surface according to user preference, and doing

so would simply be an optimization of proportions, and the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961). McCann teaches the cushioning element is an elastomeric cushioning element (see, paragraph 27, and Figure 2; 8). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning layer 106 of Kluft to be elastomeric as in McCann in order to increase user comfort according to user preference by including resiliency in the mattress.

n. Regarding claim 11, Kluft teaches the plurality of pocketed coils are oriented next to each other in a grid pattern (Figure 1; 80, 84).

o. Regarding claim 13, Kluft does not teach the at least one elastomeric cushioning element comprises a plurality of distinct elastomeric cushioning elements disposed at different locations over the upper layer. McCann teaches the at least one elastomeric cushioning element comprises a plurality of distinct elastomeric cushioning elements disposed at different locations over the upper layer (Figure 1; columns 4). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning layer 106 of Kluft to be elastomeric as in McCann in order to increase user comfort according to user preference by including resiliency in the mattress.

p. Regarding claim 14, Kluft does not teach the at least one elastomeric cushioning element does not cover an entirety of an upper surface of the upper layer. McCann teaches the at least one elastomeric cushioning element does not cover an entirety of an upper surface of the upper layer (Figure 1; voids 2). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning layer 106 of Kluft to be elastomeric as in McCann in order to increase user comfort according to user preference by including resiliency in the mattress.

q. Regarding claim 15, Kluft does not teach the at least one elastomeric cushioning element comprises interconnected buckling walls. McCann teaches the at least one elastomeric cushioning element comprises interconnected buckling walls (abstract). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cushioning layer 106 of Kluft to be elastomeric as in McCann in order to increase user comfort according to user preference by including resiliency in the mattress.

4. Claim 12 is/are rejected under 35 U.S.C. 103 as being unpatentable over Kluft (US Patent 7640611) in view of McCann (US Patent Application Publication 20050223667) further in view of An (US Patent 7757322).

r. Regarding claim 12, Kluft does not teach the plurality of casings of each pocketed coil comprises: a first casing; and a second casing disposed within the first casing, wherein the coil is disposed within the second casing. An teaches the plurality of casings of each pocketed coil comprises: a first casing; and a second casing disposed within the first casing, wherein the coil is disposed within the second casing (Figure 4, 31, 32). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the springs of Kluft to be within two casings in order to provide additional firmness as desired to the springs, as well as to protect them from outside dirt and liquid.

5. Claims 17 and 18 is/are rejected under 35 U.S.C. 103 as being unpatentable over Kluft (US Patent 7640611) in view of Gilhooly (US Patent 4213214) further in view of An (US Patent 7757322).

s. Regarding claim 17, Kluft teaches disposing a coil layer over a base core layer comprises: disposing a plurality of coils within a plurality of casings (Figure 1; 80, 84); and disposing the plurality of coils over the coil layer. Kluft does not teach wherein each coil of the plurality of coils is disposed within at least two respective casings. An teaches wherein each coil of the plurality of coils is disposed within at least two respective casing (Figure 4, 31, 32). It

would have been obvious to one of ordinary skill in the art at the time of invention to modify the springs of Kluft to be within two casings in order to provide additional firmness as desired to the springs, as well as to protect them from outside dirt and liquid.

t. Regarding claim 18, An does not specifically teach disposing a plurality of coils within a plurality of casings comprises disposing the plurality of coils within polypropylene bags. However, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the pockets of An to be polypropylene bags in order to provide a tough, chemically resistant layer of protection to the springs and the selection of a known material based upon its suitability for the intended use is a design consideration within the level of skill of one skilled in the art. In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MORGAN J MCCLURE whose telephone number is (571)270-0362. The examiner can normally be reached on M-F 8:30am - 5:00pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Cuomo can be reached on 5712726856. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available

through Private PAIR only. For more information about the PAIR system, see https://ppair-my.uspto.gov/pair/PrivatePair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MORGAN J MCCLURE/
Examiner, Art Unit 3673

/NICHOLAS F POLITO/
Primary Examiner, Art Unit 3673
1/3/20

Notice of References Cited	Application/Control No. 15/816,983	Applicant(s)/Patent Under Reexamination Pearce et al.	
	Examiner MORGAN J MCCLURE	Art Unit 3673	Page 1 of 3

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
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*	B	US-20140130265-A1	05-2014	Lauer; Edouard	A47C27/144	5/716
*	C	US-20100005595-A1	01-2010	Gladney; Richard F.	A47C27/148	5/691
*	D	US-20110302721-A1	12-2011	Khambete; Surendra S.	A47C23/043	5/716
*	E	US-20110197363-A1	08-2011	Kokenes; Stephen C.	A47C27/15	5/652
*	F	US-20110179579-A1	07-2011	Henderson; Randal Lee	A47C23/007	5/717
*	G	US-20110173757-A1	07-2011	Rensink; Bob	A47C27/04	5/698
*	H	US-20100319137-A1	12-2010	Witherell; Timothy Michael	A47C27/04	5/717
*	I	US-8006360-B2	08-2011	Richmond; James R.	B29C44/04	29/91.1
*	J	US-4234981-A	11-1980	Hanson; Paul B.	A47C27/00	5/411
*	K	US-4213214-A	07-1980	Gilhooly; James E.	A47C27/001	5/679
*	L	US-6701557-B2	03-2004	Barman; Bruce G.	A47C27/05	5/721
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Notice of References Cited	Application/Control No. 15/816,983	Applicant(s)/Patent Under Reexamination Pearce et al.	
	Examiner MORGAN J MCCLURE	Art Unit 3673	Page 2 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
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*	C	US-20140208517-A1	07-2014	Gross; Andrew	A47C27/085	5/691
*	D	US-4504991-A	03-1985	Klancnik; Alvin R.	A47C31/001	5/698
*	E	US-4092752-A	06-1978	Dougan; Thomas P.	A47C31/001	5/400
*	F	US-3512192-A	05-1970	SIMON GEORGE	A47C27/053	5/698
*	G	US-8353072-B2	01-2013	Klancnik; Alvin R.	A47C31/001	5/698
*	H	US-8429776-B2	04-2013	Klancnik; Alvin R.	A47C31/001	5/698
*	I	US-7581271-B2	09-2009	Gladney; Richard F.	A47C19/20	5/699
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Notice of References Cited	Application/Control No. 15/816,983	Applicant(s)/Patent Under Reexamination Pearce et al.	
	Examiner MORGAN J MCCLURE	Art Unit 3673	Page 3 of 3

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
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*	B	US-7730566-B2	06-2010	Flick; Roland E.	A47C7/021	267/153
*	C	US-8607387-B2	12-2013	Flick; Roland E.	A61G7/0525	5/655.5
*	D	US-6523812-B1	02-2003	Spinks; Peter Douglas	A47C27/001	267/166
*	E	US-7757322-B2	07-2010	An; Jung Ho	A47C27/001	5/722
*	F	US-8910334-B2	12-2014	Lafleche; Patrick	A61G7/05715	5/713
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15/816,983	Pearce et al.
	Examiner	Art Unit
	MORGAN J MCCLURE	3673

CPC - Searched*		
Symbol	Date	Examiner
A47C27/20,001,056,06,064,146,148,15	01/02/2020	MM

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US Classification - Searched*			
Class	Subclass	Date	Examiner

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Search Notes		
Search Notes	Date	Examiner
Inventor Name Search	01/02/2020	MM

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2017-11-17
First Named Inventor	Tony M. Pearce
Art Unit	
Examiner Name	
Attorney Docket Number	3388.01-P13943US

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4369284		1983-01-18	Chen	
	2	5994450		1999-11-30	Pearce	
	3	7964664		2011-06-21	Pearce	
	4	8434748		2013-05-07	Pearce et al.	
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	6	8919750		2014-12-30	Pearce et al.	
	7	8932692		2015-01-13	Pearce	

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Application Number	
Filing Date	2017-11-17
First Named Inventor	Tony M. Pearce
Art Unit	
Examiner Name	
Attorney Docket Number	3388.01-P13943US

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20170251825	A1	2017-09-07	Pearce	

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	1	U.S. Patent Application No. 15/662,934, to Moon et al., filed July 28, 2017.	

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2017-11-17
First Named Inventor	Tony M. Pearce
Art Unit	
Examiner Name	
Attorney Docket Number	3388.01-P13943US

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Kyle M. Woodhouse/	Date (YYYY-MM-DD)	2017-11-17
Name/Print	Kyle M. Woodhouse	Registration Number	70,087

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

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8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

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BIB DATA SHEET

CONFIRMATION NO. 9411

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/816,983	11/17/2017	005	3673	54023-3030US01

APPLICANTS

Purple Innovation, LLC, Alpine, UT;

INVENTORS

Tony M. Pearce, Alpine, UT;
Lars Christen Hamilton, Alpine, UT;
Tanner Rick Wheadon, Lehi, UT;

**** CONTINUING DATA ***************************

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****
12/04/2017

Foreign Priority claimed ❑ Yes ☑ No 35 USC 119(a-d) conditions met ❑ Yes ❑ No Verified and Acknowledged /MORGAN J MCCLURE/ Examiner's Signature	❑ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		UT	6	20	3

ADDRESS

Durham Jones & Pinegar, P.C.
Intellectual Property Law Group
3301 N. Thanksgiving Way, Suite 400
Lehi, UT 84043
UNITED STATES

TITLE

MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

FILING FEE RECEIVED		
1600	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	❑ All Fees ❑ 1.16 Fees (Filing) ❑ 1.17 Fees (Processing Ext. of time) ❑ 1.18 Fees (Issue) ❑ Other _____ ❑ Credit

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L6	113	(pearce and tony).in.	US-PGPUB; USPAT; USOCR	OR	OFF	2020/01/02 10:46
L7	216	("1228783" | "20020013407" | "20020061384" | "20040172766" | "20050223667" | "20060194925" | "20070246157" | "20090246449" | "20100229308" | "2029370" | "2385870" | "2458588" | "2491557" | "2617751" | "2655369" | "2672183" | "2715435" | "2814053" | "2887425" | "2979739" | "3043731" | "3197357" | "3222697" | "3308491" | "3407406" | "3459179" | "3462778" | "3518786" | "3529368" | "3552044" | "3605145" | "3748669" | "3748779" | "3801420" | "3893198" | "3940811" | "3968530" | "3986213" | "4038762" | "4083127" | "4144658" | "4163297" | "4229546" | "4243754" | "4247963" | "4252910" | "4255202" | "4256304" | "4274169" | "4279044" | "4292701" | "4335476" | "4369284" | "4370769" | "4378396" | "4383342" | "4422194" | "4457032" | "4467053" | "4472847" | "4483029" | "4485505" | "4485568" | "4498205" | "4541136" | "4572174" | "4588229" | "4614632" | "4618213" | "4628557" | "4660238" | "4670925" | "4686724" | "4698864" | "4709431" | "4713854" | "4726624" | "4728551" | "4737998" | "4744564" | "4761843" | "4842330" | "4913755" | "4945588" | "4952190" | "4952439" | "4953913" | "4959059" | "4967433" | "5010608" | "5013518" | "5015313" | "5018790" | "5020176" | "5027801" | "5039567" | "5052068" | "5053436" | "5058291" | "5074620" | "5079786" | "5079787" | "5093138" | "5100712" | "5103518" | "5111544" | "5147685" | "5149173" | "5152023" | "5153956" | "5163196" | "5171766" | "5172494" | "5180619" | "5190504" | "5191752" | "5201780" | "5203607" | "5204154" | "5211446" | "5243722" | "5255404").PN. OR ("5262468" | "5282286" | "5289878" | "5314735" | "5330249" | "5334646" | "5334696" | "5335907" | "5336708" | "5352023" | "5360653" | "5362834" | "5369828" | "5403642" | "5421874" | "5429852" | "5444881" | "5445861" | "5452488" | "5456072" | "5490299" |	US-PGPUB; USPAT; USOCR	OR	OFF	2020/01/02 10:47

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L8	38	("2005/0223667").URPN.	USPAT	OR	OFF	2020/01/02 10:52
L9	77756	"5".clas.	US-PGPUB; USPAT; USOCR	OR	OFF	2020/01/02 11:11
L10	319	L9 and (foam with adhesive)	USPAT	OR	OFF	2020/01/02 11:11
L11	138	L9 and ((spring coil) with second with (casing case pocket pocketed pocketing cased))	USPAT	OR	ON	2020/01/02 11:19
L12	7	L9 and ((spring coil) with (second adj (casing case pocket pocketed pocketing cased)))	USPAT	OR	ON	2020/01/02 11:21
L13	2903	A47C27/20,001,056,06,064,146,148,15.cpc.	US-PGPUB; USPAT; USOCR	OR	OFF	2020/01/02 11:44
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S3	215	S1 and elastomeric and coil	US-PGPUB; USPAT; USOCR	OR	ON	2019/12/30 18:34
S4	167	S1 and elastomeric and coil and mattress	US-PGPUB; USPAT; USOCR	OR	ON	2019/12/30 18:35
S5	92	S1 and elastomer and coil and mattress	US-PGPUB; USPAT; USOCR	OR	ON	2019/12/30 18:40
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S11	2	("2014/0208517").URPN.	USPAT	OR	OFF	2019/12/30 22:40
S12	26	("20130025070" | "3512192" | "7424762" | "20100058541" | "20110154576" | "20120180225" | "20130025068" | "20120079659" | "8745795" | "20140182063" | "20080095983" | "20130025069" | "4092752" | "20070226911" | "20110256380" | "20140059776" | "6541094" | "7661164" | "2610338" | "20070226911" | "20120193572" | "20130167302" | "6668409" | "20150335166" | "5578368" | "6609261" | "6954956" | "8418297" | "20070061978" | "5513402" | "20130025065" | "3818520" | "6718583" | "20040163180" | "20110173757" | "5919833" | "20120060846" | "4951336" | "20150296994" | "20060048301" | "4504991" | "20120180225" | "8414732" | "5837002" | "6699266" | "7469437" | "3833951" | "8181293" | "20090142551" | "20120022620" | "20130025068" | "7827637" | "20130174344" | "5513402" | "4824719").PN.	USPAT	OR	OFF	2019/12/30 22:46
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S14	1682	springs and (base with foam)	USPAT	OR	OFF	2019/12/30 23:10
S15	220	S14 and S6	USPAT	OR	OFF	2019/12/30 23:10
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EAST Search History (Interference)

< This search history is empty>

1/ 2/ 2020 11:44:33 AM
C:\ Users\ mmcclure\ Documents\ EAST\ Workspaces\ 15816983 elastomeric mattress.wsp

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/816,983	11/17/2017	Tony M. Pearce	54023-3030US01

CONFIRMATION NO. 9411

128128
Durham Jones & Pinegar, P.C.
Intellectual Property Law Group
3301 N. THANKSGIVING WAY SUITE 400
Lehi, UT 84043

PUBLICATION NOTICE

OC000000108413245

Title:MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

Publication No.US-2019-0150632-A1
Publication Date:05/23/2019

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

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Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/816,983	11/17/2017	Tony M. Pearce	3388.01-P13943US

CONFIRMATION NO. 9411

POWER OF ATTORNEY NOTICE

24247
TRASKBRITT, P.C.
P.O. BOX 2550
SALT LAKE CITY, UT 84110

OC000000104444168

Date Mailed: 12/14/2018

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 12/11/2018.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/816,983	11/17/2017	Tony M. Pearce	54023-3030US01

CONFIRMATION NO. 9411

POA ACCEPTANCE LETTER

128128
Durham Jones & Pinegar, P.C.
Durham Jones & Pinegar, P.C.
INTELLECTUAL PROPERTY LAW GROUP
3301 N. THANKSGIVING WAY SUITE 400
Lehi, UT 84043

OC00000104444177

Date Mailed: 12/14/2018

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

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Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
Approved for use through 01/31/2018. OMB 0651-0035
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Application Number	15/816,983
Filing Date	2017-11-17
First Named Inventor	Tony M. Pearce
Title	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
Art Unit	3673
Examiner Name	unassigned
Attorney Docket Number	54023-3030US01

SIGNATURE of Applicant or Patent Practitioner

Signature	/James A. Larson/	Date (Optional)	
Name	James A. Larson	Registration Number	66,928
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

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Doc Code: PA..
Document Description: Power of Attorney

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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 128128

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Purple Innovation, LLC.

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	
Name	Casey McGarvey		
Title	Chief Legal Officer		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	34554891
Application Number:	15816983
International Application Number:	
Confirmation Number:	9411
Title of Invention:	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
First Named Inventor/Applicant Name:	Tony M. Pearce
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1	Power of Attorney	2018-12-11-aia82a-POA-54023-3030US01.pdf	391292 8f75ae5622784c316d9d1811e6d2b0cb8c7ed662	no	3

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Tony M. Pearce et al.

Serial No.: 15/816,983

Filed: November 17, 2017

For: MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

Confirmation No.: 9411

Examiner:

Group Art Unit: 3673

Attorney Docket No.: 3388.01-P13943US

VIA ELECTRONIC FILING

May 24, 2018

PRELIMINARY AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

Prior to examination of the above-referenced patent application on the merits, entry of the amendments as set forth herein is respectfully solicited.

Amendments to the title are set forth on page 3 of this paper;

Amendments to the specification are set forth in a Substitute Specification submitted herewith, are discussed on page 4 of this paper, and illustrated in a Marked-Up version of the Specification also submitted herewith;

Amendments to the claims are set forth in the listing of the claims that begins on page 5 of this paper; and

Remarks start at page 9 of this paper.

APPENDIX A

(CLEAN VERSION OF SUBSTITUTE SPECIFICATION)

(Serial No. 15/816,983)

PATENT
Attorney Docket 3388.01-P13943US

VIA ELECTRONIC FILING
November 17, 2017

APPLICATION FOR UNITED STATES LETTERS PATENT

for

MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

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TITLE

MATTRESSES INCLUDING AN ELEASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

FIELD

[0001] Embodiments of the disclosure relate generally to cushioning elements such as mattresses including a pocketed coil layer, and to methods of making such mattresses.

BACKGROUND

[0002] Cushioning materials have a variety of uses, such as for mattresses, seating surfaces, shoe inserts, packaging, medical devices, *etc.* Cushioning materials may be formulated and/or configured to reduce peak pressure on a cushioned body, which may increase comfort for humans or animals, and may protect objects from damage. Cushioning materials may be formed of materials that deflect or deform under load, such as polyethylene or polyurethane foams (*e.g.,* convoluted foam), vinyl, rubber, springs, natural or synthetic fibers, fluid-filled flexible containers, *etc.* Different cushioning materials may have different responses to a given pressure, and some materials may be well suited to different applications. Cushioning materials may be used in combination with one another to achieve selected properties. For example, mattresses may include pocketed coils in combination with layers of foam, elastomer gels, *etc.,* in order to achieve desired results in the cushioning materials.

[0003] In mattresses, springs (*e.g.,* coil springs) may be preferable to foam for their durability and ability to withstand compression. Springs may also impart a feel that may be more desirable to users than that of foam. Despite these advantages, springs may not provide a positive aesthetic and/or tactile experience if they are seen or felt through side panels of the mattress, prompting manufacturers to conceal the feel of springs on the sides of mattresses. One solution includes a wire frame around the edge of the mattress to provide structure to a cover of the mattress. However, the metal of the wire frame may be felt through the cover of the mattress. In addition, such a wire frame may not be particularly suited to handle compression during use and to packing mattresses for shipping and/or storage, such as direct-to-consumer mattresses that are shipped in logs, boxes, *etc*.

BRIEF SUMMARY

[0004] In some embodiments, a mattress assembly may include a base layer, a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils, an upper layer disposed over the coil layer, and an elastomeric cushioning element disposed over the upper layer, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

[0005] In other embodiments, a mattress assembly may include a base layer, a coil layer disposed over the base layer, an upper layer disposed over the coil layer, and at least one elastomeric cushioning element disposed over the upper layer. The coil layer may include a plurality of pocketed coils, and each pocketed coil of the plurality of pocketed coils may include a plurality of casings and a coil disposed within the plurality of casings. The at least one elastomeric cushioning element may have a thickness within a range of about 2.0 inches to about 4.5 inches.

[0006] In further embodiments, a method of forming a mattress assembly may include disposing a coil layer over a base layer, disposing an upper layer over the coil layer, disposing an elastomeric cushioning element over the upper layer, wherein a thickness of the elastomeric cushioning element comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly, and disposing an outer covering over at least the upper layer.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] While the specification concludes with claims particularly pointing out and distinctly claiming what are regarded as embodiments of the present disclosure, various features and advantages of embodiments of the disclosure may be more readily ascertained from the following description of example embodiments of the disclosure when read in conjunction with the accompanying drawings, in which:

[0008] FIG. 1 is a perspective view of a mattress assembly according to the present disclosure;

[0009] FIG. 2 is a simplified perspective view of the mattress assembly of FIG. 1;

[0010] FIG. 3 is a perspective view of an elastomeric cushioning element according to one or more embodiments of the present disclosure;

[0011] FIG. 4 is a side cross-sectional view of a mattress assembly according to one or more embodiments of the present disclosure;

[0012] FIG. 5 is a side cross-sectional view of a mattress assembly according to one or more embodiments of the present disclosure;

[0013] FIG. 6 is a side cross-sectional view of a mattress assembly according to one or more embodiments of the present disclosure;

[0014] FIG. 7 is a side cross-sectional view of a mattress assembly according to one or more embodiments of the present disclosure;

[0015] FIG. 8 is a top schematic view of a mattress assembly according to one or more embodiments of the present disclosure;

[0016] FIG. 9 is a top schematic view of a mattress assembly according to one or more embodiments of the present disclosure; and

[0017] FIG. 10 is a flowchart of a method of forming a mattress assembly according to one or more embodiments of the present disclosure.

DETAILED DESCRIPTION

[0018] The following description provides specific details, such as material types, manufacturing processes, uses, and structures in order to provide a thorough description of embodiments of the disclosure. However, a person of ordinary skill in the art will understand that the embodiments of the disclosure may be practiced without employing these specific details. Indeed, the embodiments of the disclosure may be practiced in conjunction with conventional manufacturing techniques and materials employed in the industry.

[0019] In the following detailed description, reference is made to the accompanying drawings, which form a part hereof, and in which is shown, by way of illustration, specific embodiments in which the disclosure may be practiced. These embodiments are described in sufficient detail to enable a person of ordinary skill in the art to practice the disclosure. However, other embodiments may be utilized, and structural, procedural, and other changes may be made without departing from the scope of the disclosure. The illustrations presented herein are not meant to be actual views of any particular system, device, structure, or process, but are idealized representations that are employed to describe the embodiments of the disclosure. The drawings presented herein are not necessarily drawn to scale. Similar structures or components in the various drawings may retain the same or similar numbering for the convenience of the reader; however, the

similarity in numbering does not mean that the structures or components are necessarily identical in size, composition, configuration, or other property.

[0020] As used herein, any relational term, such as "first," "second," "top," "bottom," "upper," "base," etc., is used for clarity and convenience in understanding the disclosure and accompanying drawings, and does not connote or depend on any specific preference or order, except where the context clearly indicates otherwise. For example, these terms may refer to an orientation of elements of a mattress when oriented for sleeping in a conventional manner. Furthermore, these terms may refer to an orientation of elements of a mattress assembly as illustrated in the drawings.

[0021] As used herein, the term "substantially" in reference to a given parameter, property, or condition means and includes to a degree that one skilled in the art would understand that the given parameter, property, or condition is met with a small degree of variance, such as within acceptable manufacturing tolerances. For example, a parameter that is substantially met may be at least about 90% met, at least about 95% met, or even at least about 99% met.

[0022] As used herein, the term "elastomeric polymer" means and includes a polymer capable of recovering its original size and shape after deformation. In other words, an elastomeric polymer is a polymer having elastic or viscoelastic properties. Elastomeric polymers may also be referred to as "elastomers" in the art. Elastomeric polymers include, without limitation, homopolymers (polymers having a single chemical unit repeated) and copolymers (polymers having two or more chemical units).

[0023] As used herein, the term "elastomeric block copolymer" means and includes an elastomeric polymer having groups or blocks of homopolymers linked together, such as A–B diblock copolymers and A–B–A triblock copolymers. A–B diblock copolymers have two distinct blocks of homopolymers. A–B–A triblock copolymers have two blocks of a single homopolymer (A) each linked to a single block of a different homopolymer (B).

[0024] As used herein, the term "plasticizer" means and includes a substance added to another material (*e.g.*, an elastomeric polymer) to increase a workability of the material. For example, a plasticizer may increase the flexibility, softness, or extensibility of the material. Plasticizers include, without limitation, hydrocarbon fluids, such as mineral oils. Hydrocarbon plasticizers may be aromatic or aliphatic.

[0025] As used herein, the term "elastomeric material" means and includes elastomeric polymers and mixtures of elastomeric polymers with plasticizers and/or other materials. Elastomeric

materials are elastic (*i.e.*, capable of recovering size and shape after deformation). Elastomeric materials include, without limitation, materials referred to in the art as "elastomer gels," "gelatinous elastomers," or simply "gels."

[0026] Embodiments of the present disclosure include a mattress assembly having an elastomeric cushioning element that comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly. For example, the elastomeric cushioning element may comprise about 30.8% of the overall thickness of the mattress assembly.

[0027] Additional embodiments of the present disclosure include a mattress assembly having a coil layer that includes a plurality of coils with each coil of the plurality of coils being disposed in multiple casings (e.g., bags). For example, each coil may be disposed within two or more polypropylene bags.

[0028] Further embodiments of the present disclosure include a mattress assembly having a latex water based adhesive disposed between one or more layers of the mattress assembly.

[0029] FIG. 1 shows a mattress assembly 100 according to one or more embodiments of the present disclosure. FIG. 2 shows a simplified top perspective view of the mattress assembly 100 of FIG. 1. In FIG. 2, various portions of the mattress assembly 100 are removed to provide a cutaway view and to better show internal components of the mattress assembly 100. Referring to FIGS. 1 and 2 together, in one or more embodiments, the mattress assembly 100 may include a base layer 102, a coil layer 104, an upper layer 106, an elastomeric cushioning element 108, an edge portion 119, one or more side panels 114, and the outer covering 112.

[0030] The base layer 102 may have generally planar top and bottom surfaces. The coil layer 104 may be disposed on the top surface of the base layer 102 and between the base layer 102 and the upper layer 106. In particular, the upper layer 106 may be disposed over and may at least substantially extend over the coil layer 104. The elastomeric cushioning element 108 may be disposed over an upper surface of the upper layer 106 and may extend over at least a portion of the upper layer 106. The edge portion 119 may extend around an outer peripheral edge of the elastomeric cushioning element 108. The one or more side panels 114 may extend along outer perimeters of the base layer 102 and the upper layer 106 and may be disposed between the upper layer 106 and the base layer 102. Furthermore, the one or more side panels 114 may extend within a plane perpendicular to a plane defined by the top surface of the base layer 102. The outer covering 112 may extend from the

base layer 102 and may at least substantially encase the coil layer 104, upper layer 106, and elastomeric cushioning element 108.

[0031] In some embodiments, the mattress assembly 100 may include a stabilization material 116 between the elastomeric cushioning element 108 and the upper layer 106. In some instances, the stabilization material 116 may include a relatively thin material (*e.g.,* cotton spandex blend "scrim") and may be used to provide a surface for adhering (*e.g.,* gluing) the elastomeric cushioning element 108 to surrounding materials, such as another elastomeric cushioning element 108 and/or an upper surface of the upper layer 106. In some embodiments, the stabilization material 116 may comprise a scrim fabric (*e.g.,* a woven or non-woven fabric material) and portions of the elastomeric cushioning element 108 may seep through (*e.g.,* be melt-fused into, bleed through, push through, leak through, pass through, *etc.*) the scrim fabric of the stabilization material 116. For example, when the elastomeric cushioning element 108 includes a gel material (as described below), portions of the gel material may be heat fused through the stabilization material 116. The portions of the elastomeric cushioning element 108 that extend through the scrim fabric of the stabilization material 116 may create a non-slip surface or reduced slip surface on a lower surface of the stabilization material 116 (*e.g.,* surface that would contact an upper surface of the upper layer 106). The non-slip surface or reduced slip surface created by the elastomeric cushioning element 108 may help the cushioning materials stay in place relative to one another.

[0032] Furthermore, in some embodiments, an adhesive may be disposed between the stabilization material 116 and the upper surface of the upper layer 106. However, an adhesive may not be disposed between the edge portion 119 and the upper layer 106. Furthermore, an adhesive may be disposed between the base layer 102 and the coil layer 104. Moreover, an adhesive may be disposed between the coil layer 104 and the upper layer 106. Additionally, an adhesive may be disposed between the one or more side panels 114 and the coil layer 104. In some embodiments the adhesive(s) may include a latex water based adhesive. For instance, in one or more embodiments, the adhesive(s) may include one or more of SIMALFA® 338 and SIMALFA® 310.

[0033] In one or more embodiments, the mattress assembly 100 may not include a stabilization material 116 between the coil layer 104 and the upper layer 106 of the mattress assembly 100. However, in some instances, an adhesive may be disposed between the stabilization material 116 and the upper surface of the upper layer 106. For example, the adhesive may include any of the adhesives described above.

[0034] In some embodiments, the outer covering 112 may comprise a stretchable material that may be secured to or be integral with the elastomeric cushioning element 108. Such a stretchable material is described in U.S. Patent Application No. 15/062,621, to Pearce, filed March 7, 2016, the entire disclosure of which is incorporated herein by this reference.

[0035] In one or more embodiments, the base layer 102 and the upper layer 106 may include a polyurethane foam. In additional embodiments, the base layer 102 and the upper layer 106 may include one or more of a memory polyurethane foam, a latex foam rubber, or any other suitable foam. In some embodiments, the base layer 102 may include a polyurethane foam having a nominal density of about 2.0 lb/ft^3 and an indention load deflection (ILD) of 55 (i.e., 55 ILD). Additionally, the upper layer 106 may include a polyurethane foam having a nominal density of about 2.0 lb/ft^3 and 18 ILD. The one or more side panels 114 may also include a polyurethane foam or any other spacer fabric known in the art. For example, the one or more side panels 114 may include any of the side panels described in U.S. Patent Application No. 15/662,934, to Moon et al., filed July 28, 2017, the disclosure of which is incorporated in its entirety by this reference herein.

[0036] The coil layer 104 may include a plurality of coils 118 (*e.g.,* steel coils), and each coil 118 of the plurality of coils 118 may be encased in at least one respective casing 120 (*e.g.,* polypropylene socks or bags). For example, each casing 120 may form a pocket for a respective coil 118. In other words, the plurality of coils 118 may include a plurality of pocketed coils 118. In some embodiments, each coil 118 may include a relatively thin-gauge, barrel-shaped (e.g., helical-shaped), knotless coil. Furthermore, in one or more embodiments, each coil 118 may be encased in multiple casings 120. For instance, each coil 118 may be double bagged or triple bagged. In one or more embodiments, the casings 120 may include a polypropylene material.

[0037] The casings 120 may include a two-ply polypropylene non-woven material. In one or more embodiments, the polypropylene non-woven material may include one or more of BERRY® products 1430408, 1430379, and 1430538. In some embodiments, each ply of the casings 120 may have a thickness within a range of about 0.10 mm and about 0.40 mm. As a non-limiting example, each ply of the casings 120 may have a thickness within a range of about 0.15 mm and about 0.30 mm. However, any suitable material may be used. The casings 120 may provide sound dampening effects.

[0038] For example, the mattress assembly 100 was tested according to a test method of utilizing the application SOUND METER by Abc Apps from the Google Play Store on a Galaxy S6 Active phone to measure sound levels from the mattress assembly 100. During the test method, a 3x3

coil structure having each coil 118 covered by the above-described casings 120 was compressed multiple times for the duration of 15 seconds, and the 3x3 coil structure exhibited an average sound level within a range of about 35 decibels and about 45 decibels. For example, the 3x3 coil structure exhibited an average sound level of about 40 decibels. In comparison, conventional mattresses, when tested according to the above test method, exhibited an average sound level of about 50 decibels. Accordingly, by encasing each coil 118 with multiple casings 120 (e.g., a first casing 120 and a second casing 120), the mattress assembly 100 of the present disclosure may be advantageous over conventional mattress assemblies. For example, the mattress assembly 100 may be quieter than conventional mattresses (e.g., may exhibit about 20% less sound than conventional mattresses).

[0039] In some embodiments, each casing 120 of each coil 118 of the plurality of coils 118 may be individual and discrete. In additional embodiments, the casings 120 of the plurality of coils 118 may be connected (i.e., joined) and may form a single body. Furthermore, each coil 118 of the plurality of coils 118 may extend longitudinally in a direction at least substantially orthogonal (i.e., normal) to an upper surface of the base layer 102. Furthermore, the plurality of coils 118 may be oriented next to each other in an array (e.g., rows and columns or a grid pattern) to form the coil layer 104.

[0040] FIG. 3 is a simplified perspective view of the elastomeric cushioning element 108. The elastomeric cushioning element 108 may include a singly-molded elastomeric cushioning element 108. For example, the entirety of the elastomeric cushioning element 108 may be formed via a single molding process. In some embodiments, the elastomeric cushioning element 108 may include buckling walls 122. The buckling walls 122 of the elastomeric cushioning element 108 may be interconnected to one another and may define hollow columns 124 or voids in an expanded form. As used herein, the term "expanded form" means and includes a state in which a elastomeric cushioning element 108 has its original size and shape and wherein the buckling walls 122 are separated and define hollow columns 124.

[0041] The buckling walls 122 may extend in two directions, intersecting at right angles, and defining square voids 126. However, in some embodiments, the buckling walls 122 may intersect at other angles and define voids 126 of other shapes, such as triangles, parallelograms, hexagons, *etc.* The elastomeric cushioning element 108 may comprise additional structures and configurations such as those structures and configurations described in, for example, U.S. Patent 8,434,748, titled "Cushions Comprising Gel Springs," issued May 7, 2013; U.S. Patent 8,628,067, titled "Cushions

Comprising Core Structures and Related Methods," issued January 14, 2014; U.S. Patent 8,919,750, titled "Cushioning Elements Comprising Buckling Walls and Methods of Forming Such Cushioning Elements," issued December 30, 2014; and U.S. Patent 8,932,692, titled "Cushions Comprising Deformable Members and Related Methods," issued January 13, 2015, the entire disclosure of each of which is incorporated herein by this reference.

[0042] The buckling walls 122 may be formed of an elastomeric material. Elastomeric materials are described in, for example, U.S. Patent 5,994,450, titled "Gelatinous Elastomer and Methods of Making and Using the Same and Articles Made Therefrom," issued November 30, 1999 (hereinafter "the '450 Patent"); U.S. Patent 7,964,664, titled "Gel with Wide Distribution of MW in Mid-Block" issued June 21, 2011; U.S. Patent 4,369,284, titled "Thermoplastic Elastomer Gelatinous Compositions" issued January 18, 1983; U.S. Patent 8,919,750, titled "Cushioning Elements Comprising Buckling Walls and Methods of Forming Such Cushioning Elements," issued December 30, 2014 (hereinafter "the '750 Patent"); the disclosures of each of which are incorporated herein in their entirety by this reference. The elastomeric material may include an elastomeric polymer and a plasticizer. The elastomeric material may be a gelatinous elastomer (also referred to in the art as gel, elastomer gel, or elastomeric gel), a thermoplastic elastomer, a natural rubber, a synthetic elastomer, a blend of natural and synthetic elastomers, *etc.*

[0043] The elastomeric polymer may be an A–B–A triblock copolymer such as styrene ethylene propylene styrene (SEPS), styrene ethylene butylene styrene (SEBS), and styrene ethylene ethylene propylene styrene (SEEPS). For example, A–B–A triblock copolymers are currently commercially available from Kuraray America, Inc., of Houston, TX, under the trade name SEPTON® 4055, and from Kraton Polymers, LLC, of Houston, TX, under the trade names KRATON® E1830, KRATON® G1650, and KRATON® G1651. In these examples, the "A" blocks are styrene. The "B" block may be rubber (*e.g.*, butadiene, isoprene, *etc.*) or hydrogenated rubber (*e.g.*, ethylene/propylene or ethylene/butylene or ethylene/ethylene/propylene) capable of being plasticized with mineral oil or other hydrocarbon fluids. The elastomeric material may include elastomeric polymers other than styrene-based copolymers, such as non-styrenic elastomeric polymers that are thermoplastic in nature or that can be solvated by plasticizers or that are multi-component thermoset elastomers.

[0044] The elastomeric material may include one or more plasticizers, such as hydrocarbon fluids. For example, elastomeric materials may include aromatic-free food-grade white paraffinic

mineral oils, such as those sold by Sonneborn, Inc., of Mahwah, NJ, under the trade names BLANDOL® and CARNATION®.

[0045] In some embodiments, the elastomeric material may have a plasticizer-to-polymer ratio from about 0.1:1 to about 50:1 by weight. For example, elastomeric materials may have plasticizer-to-polymer ratios from about 1:1 to about 30:1 by weight, or even from about 1.5:1 to about 10:1 by weight. In further embodiments, elastomeric materials may have plasticizer-to-polymer ratios of about 4:1 by weight.

[0046] The elastomeric material may have one or more fillers (*e.g.*, lightweight microspheres). Fillers may affect thermal properties, density, processing, *etc.*, of the elastomeric material. For example, hollow microspheres (*e.g.*, hollow glass microspheres or hollow acrylic microspheres) may decrease the thermal conductivity of the elastomeric material by acting as an insulator because such hollow microspheres (*e.g.*, hollow glass microspheres or hollow acrylic microspheres) may have lower thermal conductivity than the plasticizer or the polymer. As another example, metal particles (*e.g.*, aluminum, copper, *etc.*) may increase the thermal conductivity of the resulting elastomeric material because such particles may have greater thermal conductivity than the plasticizer or polymer. Microspheres filled with wax or another phase-change material (*i.e.*, a material formulated to undergo a phase change near a temperature at which a cushioning element may be used) may provide temperature stability at or near the phase-change temperature of the wax or other phase-change material within the microspheres (*i.e.*, due to the heat of fusion of the phase change). The phase-change material may have a melting point from about 20°C to about 45°C.

[0047] The elastomeric material may also include antioxidants. Antioxidants may reduce the effects of thermal degradation during processing or may improve long-term stability. Antioxidants include, for example, pentaerythritol tetrakis(3-(3,5-di-tert-butyl-4-hydroxyphenyl) propionate), commercially available as IRGANOX® 1010, from BASF Corp., of Iselin, NJ or as EVERNOX®-10, from Everspring Corp. USA, of Los Angeles, CA; octadecyl-3-(3,5-di-tert-butyl-4-hydroxyphenyl) propionate, commercially available as IRGANOX® 1076, from BASF Corp. or as EVERNOX® 76, from Everspring Chemical; and tris(2,4-di-tert-butylphenyl)phosphite, commercially available as IRGAFOS® 168, from BASF Corp. or as EVERFOS® 168, from Everspring Chemical. One or more antioxidants may be combined in a single formulation of elastomeric material. The use of antioxidants in mixtures of plasticizers and polymers is described in columns 25 and 26 of the '450 Patent. The elastomeric material may include

up to about 5 wt% antioxidants. For instance, the elastomeric material may include from about 0.10 wt% to about 1.0 wt% antioxidants.

[0048] In some embodiments, the elastomeric material may include a resin. The resin may be selected to modify the elastomeric material to slow a rebound of the elastomeric cushioning element 108 after deformation. The resin, if present, may include a hydrogenated pure monomer hydrocarbon resin, such as those commercially available from Eastman Chemical Company, of Kingsport, TN, under the trade name REGALREZ®. The resin, if present, may function as a tackifier, increasing the stickiness of a surface of the elastomeric material.

[0049] In some embodiments, the elastomeric material may include a pigment or a combination of pigments. Pigments may be aesthetic and/or functional. That is, pigments may provide the elastomeric cushioning element 108 with an appearance appealing to consumers. In addition, an elastomeric cushioning element 108 having a dark color may absorb radiation differently than an elastomeric cushioning element 108 having a light color.

[0050] The elastomeric material may include any type of gelatinous elastomer. For example, the elastomeric material may include a melt-blend of one part by weight of a styrene-ethylene-ethylene-propylene-styrene (SEEPS) elastomeric triblock copolymer (*e.g.*, SEPTON® 4055) with four parts by weight of a 70-weight straight-cut white paraffinic mineral oil (*e.g.*, CARNATION® white mineral oil) and, optionally, pigments, antioxidants, and/or other additives.

[0051] The elastomeric material may include a material that may return to its original shape after deformation, and that may be elastically stretched. The elastomeric material may be rubbery in feel, but may deform to the shape of an object applying a deforming pressure better than conventional rubber materials, and may have a durometer hardness lower than conventional rubber materials. For example, the elastomeric material may have a hardness on the Shore A scale of less than about 50, from about 0.1 to about 50, or less than about 5.

[0052] Referring again to FIG. 2 again, a configuration of having the coil layer 104 with the upper layer 106 on top of the coil layer 104 and the elastomeric cushioning element 108 on top of the upper layer 106 may provide advantages over conventional mattress assemblies. For example, in comparison to conventional mattress assemblies, the plurality of coils 118 of the coil layer 104 may better conform to an upper surface of the mattress assembly 100. For instance, when subjected to a weight (e.g., a person on the mattress assembly 100) and a resulting deformation, the plurality of

coils 118 of the coil layer 104 may better conform to the deformation. Furthermore, the configuration may provide an increase in lateral stability in comparison to conventional mattress assemblies. Additionally, the foregoing configuration may make methods of manufacturing the mattress assembly 100 easier in comparison to conventional methods of manufacturing mattresses because it removes a need to laminate/glue the coil layer 104 to the elastomeric cushioning element 108. Having the upper layer 106 between the coil layer 104 and the elastomeric cushioning element 108 provides a porous surface to adhere to both of the coil layer 104 and the elastomeric cushioning element 108. Furthermore, the upper layer 106 dampens sound from the coil layer 104.

[0053] FIGS. 4-7 show schematic side cross-sectional views of mattress assemblies according to embodiments of the present disclosure. As shown in FIG. 4, in some embodiments, the elastomeric cushioning element 108 may not cover an entirety of an upper surface of the upper layer 106 of the mattress assembly 100. In such embodiments, the mattress assembly 100 may further include one or more segments 128 of foam (e.g., a polyurethane foam) in place of the elastomeric cushioning element 108 to provide an at least substantially planar upper surface of the mattress assembly 100. For instance, the one or more segments 128 of foam may be disposed adjacent to the elastomeric cushioning element 108 on the upper layer 106 of the mattress assembly 100.

[0054] In some embodiments, the elastomeric cushioning element 108 may be disposed only over a center portion of the upper layer 106 of the mattress assembly 100. For example, the elastomeric cushioning element 108 may not cover a portion of the upper layer 106 extending around a perimeter of the upper layer 106 of the mattress assembly 100. In such embodiments, the segments of foam 128 may be disposed over the portion of the upper layer 106 extending around a perimeter of the upper layer 106. The foregoing configuration may be utilized with mattress sizes where only one sleeper is expected (i.e., twin and full sized mattress).

[0055] In additional embodiments, the elastomeric cushioning element 108 may be disposed only in areas anticipated as predominant sleeping areas of sleepers. For example, the elastomeric cushioning element 108 may include two separate sections centered on opposing longitudinal halves of the mattress assembly 100. The foregoing configuration may be utilized with mattress sizes where two sleepers are expected (i.e., king, queen, and full sized mattresses). Furthermore, the foregoing embodiment is described in further detail with reference to FIG. 8.

[0056] As show in FIGS. 5-7, a thickness of the elastomeric cushioning element 108 may vary. In some embodiments, the elastomeric cushioning element 108 may have a thickness T of within

a range of about 1.5 inches to about 2.5 inches. Furthermore, in some instances, the thickness T of the elastomeric cushioning element 108 may comprise between about 15.0% and about 20.0% of an overall thickness of the mattress assembly 100. For instance, the elastomeric cushioning element 108 may have a thickness T of about 2.0 inches and a thickness T that comprises about 18.2% of the overall thickness of the mattress assembly 100. In additional embodiments, the elastomeric cushioning element 108 may have a thickness T of within a range of about 2.5 inches to about 3.5 inches. Moreover, in some embodiments, the thickness T of the elastomeric cushioning element 108 may comprise between about 20.0% and about 30.0% of an overall thickness of the mattress assembly 100. For example, the elastomeric cushioning element 108 may have a thickness T of about 3.0 inches and a thickness T that comprises about 25.0% of the overall thickness of the mattress assembly 100. In further embodiments, the elastomeric cushioning element 108 may have a thickness T of within a range of about 3.5 inches to about 4.5 inches. Additionally, in one or more embodiments, the thickness T of the elastomeric cushioning element 108 may comprise between about 30.0% and about 35.0% of an overall thickness of the mattress assembly 100. As a non-limiting example, the elastomeric cushioning element 108 may have a thickness T of about 4.0 inches and a thickness T that comprises about 30.8% of the overall thickness of the mattress assembly 100.

[0057] Referring still to FIGS. 5-7, in some embodiments, the upper layer 106 of the mattress assembly 100 may have a thickness within a range of about 0.25 inch and about 0.75 inch. For instance, the upper layer 106 of the mattress assembly 100 may have a thickness of about 0.50 inch. Additionally, the coil layer 104 of the mattress assembly 100 may have a thickness (e.g., height) within range of about 6.0 inches and about 9.0 inches. For example, the coil layer 104 of the mattress assembly 100 may have a thickness of about 7.5 inches. Moreover, the base layer 102 of the mattress assembly 100 may a thickness within a range of about 0.50 inch and about 1.50 inches. As a non-limiting example, the base layer 102 may have a thickness of about 1.00 inch.

[0058] FIGS. 8 and 9 show top views of mattress assemblies according to embodiments of the present disclosure. As shown in FIG. 8, in some embodiments, the mattress assembly 800 may include one or more elastomeric cushioning element sections 802, 804 (e.g., a plurality of distinct elastomeric cushioning elements). Furthermore, the one or more elastomeric cushioning element sections 802, 804 may be disposed (e.g., located) in anticipated sleeping areas of one or more sleepers. For example, for a mattress size where two sleepers are anticipated (e.g., a queen and/or king size bed), the mattress assembly 800 may include a first elastomeric cushioning element section 802 and

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a second elastomeric cushioning element section 804. The first elastomeric cushioning element section 802 may be centered longitudinally within a first half 806 of the overall mattress assembly 800 (divided longitudinally), and the second elastomeric cushioning element section 804 may be centered longitudinally within a second half 808 of the overall mattress assembly 800. In some embodiments, each of the first elastomeric cushioning element section 802 and the second elastomeric cushioning element section 804 may have a width within a range of about 22.0 inches to about 28.0 inches. For instance, each of the first and second elastomeric cushioning element sections 802, 804 may have a width of about 25.0 inches. Furthermore, each of the first and second elastomeric cushioning element sections 802, 804 may have a length (e.g., longitudinal length) within a range of about 50.0 inches to about 65 inches. For example, the first and second elastomeric cushioning element sections 802, 804 may have a length of about 56.0 inches. Furthermore, a polyurethane foam 810 may be disposed where coverage is not provided by the first and second elastomeric cushioning element sections 802, 804. In some instances, the polyurethane foam 810 may include a polyurethane foam having a nominal density of about 2.0 lb/ft^3 and 18 ILD.

[0059] As shown in FIG. 9, in some embodiments, the elastomeric cushioning element 902 may provide complete coverage over a mattress assembly 900. For example, the elastomeric cushioning element 902 may cover at least substantially an entire upper surface of the upper layer 106 (FIG. 2) of the mattress assembly 900.

[0060] FIG. 10 shows a schematic flowchart of a method 1000 of forming a mattress assembly 100. In some embodiments, the method 1000 may include an act 1010 of disposing a coil layer 104 over a base layer 102. For example, act 1010 may include disposing a plurality of coils 118 within a plurality of casings 120, wherein each coil 118 of the plurality of coils 118 is disposed within at least two respective casings 120, and disposing the plurality of coils 118 over the coil layer 104. Additionally, act 1010 can include disposing the plurality of coils 118 within polypropylene bags. Furthermore, act 1010 may include orienting the plurality of coils 118 within an array (e.g., rows and columns) over the base layer 102. Moreover, act 1010 may include disposing the coil layer 104 over the base layer 102 according to any of the configurations described above in regard to FIGS. 1, 2, and 4-7.

[0061] Additionally, the method 1000 may include an act 1020 of disposing an upper layer 106 over the coil layer 104. In some embodiments, act 1020 may not include disposing a stabilization material between the coil layer 104 and the upper layer 106. However, in some

embodiments, act 1020 may include disposing an adhesive between the coil layer 104 and the upper layer 106. For example, act 1020 may include disposing any of the adhesives described above between the coil layer 104 and the upper layer 106. Furthermore, act 1020 may include disposing an upper layer 106 over the coil layer 104 according to any of the configurations described above in regard to FIGS. 1, 2, and 4-7.

[0062] Moreover, the method 1000 may include an act 1030 of disposing an elastomeric cushioning element 108 over the upper layer 106. For example, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 that comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly 100. For instance, a thickness of the elastomeric cushioning element 108 comprises between about 20.0% and about 32.0% of an overall thickness of the mattress assembly 100. In additional embodiments, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 that comprises between about 25.0% and about 32.0% of an overall thickness of the mattress assembly 100. In further embodiments, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 that comprises between about 30.0% and about 32.0% of an overall thickness of the mattress assembly 100. For instance, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 that comprises about 30.8% of an overall thickness of the mattress assembly 100.

[0063] In some embodiments, act 1030 can include disposing a plurality of elastomeric cushioning element 108 segments over the upper layer 106. Moreover, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 according to any of the configurations described above and including any of the materials described in regard to FIGS. 1-9.

[0064] Additionally, the method 1000 may include act 1040 of disposing an outer covering 112 over at least the upper layer 106. For example, act 1040 can include disposing an outer covering 112 over the mattress assembly 100 such that the outer covering 112 covers at least substantially an entirety of the upper layer 106 and side panels 114 of the mattress assembly 100. In one or more embodiments, the method 600 can include disposing an adhesive between any of the layers of the mattress assembly 100.

[0065] Additional non-limiting example embodiments of the disclosure are described below.

[0066] Embodiment 1: A mattress assembly, comprising: a base layer; a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketedcoil; an upper layer disposed over the coil layer; and an elastomeric cushioning element disposed over the upper layer, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

[0067] Embodiment 2: The mattress assembly of Embodiment 1, wherein the coil layer has a thickness within a range of about 6.00 inches and about 8.00 inches.

[0068] Embodiment 3: The mattress assembly of Embodiment 2, wherein the coil layer has a thickness of about 7.50 inches.

[0069] Embodiment 4: The mattress assembly of Embodiment 1, further comprising: one or more side panels extending around outer perimeters of the base layer and the upper layer; and an outer covering disposed over the upper layer at least partially around the one or more side panels.

[0070] Embodiment 5: The mattress assembly of Embodiment 1, wherein the base layer and the upper layer both comprise a polyurethane foam.

[0071] Embodiment 6: The mattress assembly of Embodiment 1, wherein the elastomeric cushioning element has a thickness of about 4.0 inches.

[0072] Embodiment 7: The mattress assembly of Embodiment 1, further comprising an adhesive disposed between the elastomeric cushioning element and the upper layer.

[0073] Embodiment 8: The mattress assembly of Embodiment 7, wherein the adhesive comprises a latex water based adhesive.

[0074] Embodiment 9: The mattress assembly of Embodiment 1, wherein the base layer has a thickness within a range of about 0.75 inch and about 1.50 inches, and wherein the upper layer has a thickness within a range of about 0.25 inch and about 0.75 inch.

[0075] Embodiment 10: A mattress assembly, comprising: a base layer; a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils, each pocketed coil of the plurality of pocketed coils comprises: a plurality of casings; and a coil disposed within the plurality of casings; an upper layer disposed over the coil layer; and at least one elastomeric cushioning element disposed over the upper layer, wherein the at least one elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

[0076] Embodiment 11: The mattress assembly of Embodiment 10, wherein the plurality of pocketed coils is oriented next to each other in a grid pattern.

[0077] Embodiment 12: The mattress assembly of Embodiment 10, wherein the plurality of casings of each pocketed coil comprises: a first casing; and a second casing disposed within the first casing, wherein the coil is disposed within the secondcasing.

[0078] Embodiment 13: The mattress assembly of Embodiment 10, wherein the at least one elastomeric cushioning element comprises a plurality of distinct elastomeric cushioning elements disposed at different locations over the upper layer.

[0079] Embodiment 14: The mattress assembly of Embodiment 10, wherein the at least one elastomeric cushioning element does not cover an entirety of an upper surface of the upper layer.

[0080] Embodiment 15: The mattress assembly of Embodiment 11, wherein the at least one elastomeric cushioning element comprises interconnected buckling walls.

[0081] Embodiment 16: A method of forming a mattress assembly, comprising: disposing a coil layer over a base layer; disposing an upper layer over the coil layer; disposing an elastomeric cushioning element over the upper layer, wherein a thickness of the elastomeric cushioning element comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly; and disposing an outer covering over at least the upper layer.

[0082] Embodiment 17: The method of Embodiment 16, wherein disposing a coil layer over a base core layer comprises: disposing a plurality of coils within a plurality of casings, wherein each coil of the plurality of coils is disposed within at least two respective casings; and disposing the plurality of coils over the coil layer.

[0083] Embodiment 18: The method of Embodiment 17, wherein disposing a plurality of coils within a plurality of casings comprises disposing the plurality of coils within polypropylene bags.

[0084] Embodiment 19: The method of Embodiment 16, wherein the elastomeric cushioning element comprises about 30.8% of the overall thickness of the mattress assembly.

[0085] Embodiment 20: The method of Embodiment 16, further comprising disposing an adhesive between the elastomeric cushioning element and the upper layer.

[0086] While the present disclosure has been described herein with respect to certain illustrated embodiments, those of ordinary skill in the art will recognize and appreciate that it is not so limited. Rather, many additions, deletions, and modifications to the illustrated embodiments may be made without departing from the scope of the disclosure as hereinafter claimed, including legal equivalents thereof. In addition, features from one embodiment may be combined with features of

another embodiment while still being encompassed within the scope of the disclosure as contemplated. Further, embodiments of the disclosure have utility with different and various mattress types and configurations.

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APPENDIX B

(VERSION OF SUBSTITUTE SPECIFICATION WITH MARKINGS TO SHOW CHANGES MADE)

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APPLICATION FOR UNITED STATES LETTERS PATENT

for

MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

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TITLE

MATTRESSES INCLUDING ~~SPACER FABRIC AND RELATED METHODS~~AN ELEASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

FIELD

[0001] Embodiments of the disclosure relate generally to cushioning elements such as mattresses including a pocketed coil layer, and to methods of making such mattresses.

BACKGROUND

[0002] Cushioning materials have a variety of uses, such as for mattresses, seating surfaces, shoe inserts, packaging, medical devices, *etc.* Cushioning materials may be formulated and/or configured to reduce peak pressure on a cushioned body, which may increase comfort for humans or animals, and may protect objects from damage. Cushioning materials may be formed of materials that deflect or deform under load, such as polyethylene or polyurethane foams (*e.g.,* convoluted foam), vinyl, rubber, springs, natural or synthetic fibers, fluid-filled flexible containers, *etc.* Different cushioning materials may have different responses to a given pressure, and some materials may be well suited to different applications. Cushioning materials may be used in combination with one another to achieve selected properties. For example, mattresses may include pocketed coils in combination with layers of foam, elastomer gels~~, *etc.*~~, *etc.*, in order to achieve desired results in the cushioning materials.

[0003] In mattresses, springs (*e.g.,* coil springs) may be preferable to foam for their durability and ability to withstand compression. Springs may also impart a feel that may be more desirable to users than that of foam. Despite these advantages, springs may not provide a positive aesthetic and/or tactile experience if they are seen or felt through side panels of the mattress, prompting manufacturers to conceal the feel of springs on the sides of mattresses. One solution includes a wire frame around the edge of the mattress to provide structure to a cover of the mattress. However, the metal of the wire frame may be felt through the cover of the mattress. In addition, such a wire frame may not be particularly suited to handle compression during use and to packing mattresses for shipping and/or storage, such as direct-to-consumer mattresses that are shipped in logs, boxes, *etc*.

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BRIEF SUMMARY

[0004] In some embodiments, a mattress assembly may include a base layer, a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils, an upper layer disposed over the coil layer, and an elastomeric cushioning element disposed over the upper layer, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

[0005] In other embodiments, a mattress assembly may include a base layer, a coil layer disposed over the base layer, an upper layer disposed over the coil layer, and at least one elastomeric cushioning element disposed over the upper layer. The coil layer may include a plurality of pocketed coils, and each pocketed coil of the plurality of pocketed coils may include a plurality of casings and a coil disposed within the plurality of casings. The at least one elastomeric cushioning element may have a thickness within a range of about 2.0 inches to about 4.5 inches.

[0006] In further embodiments, a method of forming a mattress assembly may include disposing a coil layer over a base layer, disposing an upper layer over the coil layer, disposing an elastomeric cushioning element over the upper layer, wherein a thickness of the elastomeric cushioning element comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly, and disposing an outer covering over at least the upper layer.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] While the specification concludes with claims particularly pointing out and distinctly claiming what are regarded as embodiments of the present disclosure, various features and advantages of embodiments of the disclosure may be more readily ascertained from the following description of example embodiments of the disclosure when read in conjunction with the accompanying drawings, in which:

[0008] FIG. 1 is a perspective view of a mattress assembly according to the present disclosure;

[0009] FIG. 2 is a simplified perspective view of the mattress assembly of FIG. 1;

[0010] FIG. 3 is a perspective view of an elastomeric cushioning element according to one or more embodiments of the present disclosure;

[0011] FIG. 4 is a side cross-sectional view of a mattress assembly according to one or more embodiments of the present disclosure;

[0012] FIG. 5 is a side cross-sectional view of a mattress assembly according to one or more embodiments of the present disclosure;

[0013] FIG. 6 is a side cross-sectional view of a mattress assembly according to one or more embodiments of the present disclosure;

[0014] FIG. 7 is a side cross-sectional view of a mattress assembly according to one or more embodiments of the present disclosure;

[0015] FIG. 8 is a top schematic view of a mattress assembly according to one or more embodiments of the present disclosure;

[0016] FIG. 9 is a top schematic view of a mattress assembly according to one or more embodiments of the present disclosure; and

[0017] FIG. 10 is a ~~flow-chart~~ flowchart of a method of forming a mattress assembly according to one or more embodiments of the present disclosure.

DETAILED DESCRIPTION

[0018] The following description provides specific details, such as material types, manufacturing processes, uses, and structures in order to provide a thorough description of embodiments of the disclosure. However, a person of ordinary skill in the art will understand that the embodiments of the disclosure may be practiced without employing these specific details. Indeed, the embodiments of the disclosure may be practiced in conjunction with conventional manufacturing techniques and materials employed in the industry.

[0019] In the following detailed description, reference is made to the accompanying drawings, which form a part hereof, and in which is shown, by way of illustration, specific embodiments in which the disclosure may be practiced. These embodiments are described in sufficient detail to enable a person of ordinary skill in the art to practice the disclosure. However, other embodiments may be utilized, and structural, procedural, and other changes may be made without departing from the scope of the disclosure. The illustrations presented herein are not meant to be actual views of any particular system, device, structure, or process, but are idealized representations that are employed to describe the embodiments of the disclosure. The drawings presented herein are not necessarily drawn to scale. Similar structures or components in the various drawings may retain the same or similar numbering for the convenience of the reader; however, the

similarity in numbering does not mean that the structures or components are necessarily identical in size, composition, configuration, or other property.

[0020] As used herein, any relational term, such as "first," "second," "top," "bottom," "upper," "base," etc., is used for clarity and convenience in understanding the disclosure and accompanying drawings, and does not connote or depend on any specific preference or order, except where the context clearly indicates otherwise. For example, these terms may refer to an orientation of elements of a mattress when oriented for sleeping in a conventional manner. Furthermore, these terms may refer to an orientation of elements ~~of mattress~~ of a mattress assembly as illustrated in the drawings.

[0021] As used herein, the term "substantially" in reference to a given parameter, property, or condition means and includes to a degree that one skilled in the art would understand that the given parameter, property, or condition is met with a small degree of variance, such as within acceptable manufacturing tolerances. For example, a parameter that is substantially met may be at least about 90% met, at least about 95% met, or even at least about 99% met.

[0022] As used herein, the term "elastomeric polymer" means and includes a polymer capable of recovering its original size and shape after deformation. In other words, an elastomeric polymer is a polymer having elastic or viscoelastic properties. Elastomeric polymers may also be referred to as "elastomers" in the art. Elastomeric polymers include, without limitation, homopolymers (polymers having a single chemical unit repeated) and copolymers (polymers having two or more chemical units).

[0023] As used herein, the term "elastomeric block copolymer" means and includes an elastomeric polymer having groups or blocks of homopolymers linked together, such as A–B diblock copolymers and A–B–A triblock copolymers. A–B diblock copolymers have two distinct blocks of homopolymers. A–B–A triblock copolymers have two blocks of a single homopolymer (A) each linked to a single block of a different homopolymer (B).

[0024] As used herein, the term "plasticizer" means and includes a substance added to another material (*e.g.*, an elastomeric polymer) to increase a workability of the material. For example, a plasticizer may increase the flexibility, softness, or extensibility of the material. Plasticizers include, without limitation, hydrocarbon fluids, such as mineral oils. Hydrocarbon plasticizers may be aromatic or aliphatic.

[0025] As used herein, the term "elastomeric material" means and includes elastomeric polymers and mixtures of elastomeric polymers with plasticizers and/or other materials. Elastomeric materials are elastic (*i.e.*, capable of recovering size and shape after deformation). Elastomeric materials include, without limitation, materials referred to in the art as "elastomer gels," "gelatinous elastomers," or simply "gels."

[0026] Embodiments of the present disclosure include a mattress assembly having an elastomeric cushioning element that comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly. For example, the elastomeric cushioning element may comprise about 30.8% of the overall thickness of the mattress assembly.

[0027] Additional embodiments of the present disclosure include a mattress assembly having a coil layer that includes a plurality of coils with each coil of the plurality of coils being disposed in multiple casings (e.g., bags). For example, each coil may be disposed within two or more polypropylene bags.

[0028] Further embodiments of the present disclosure include a mattress assembly having a latex water based adhesive disposed between one or more layers of the mattress assembly.

[0029] FIG. 1 shows a mattress assembly 100 according to one or more embodiments of the present disclosure. FIG. 2 shows a simplified top perspective view of the mattress assembly 100 of FIG. 1. In FIG. 2, various portions of the mattress assembly 100 are removed to provide a cutaway view and to better show internal components of the mattress assembly 100. Referring to FIGS. 1 and 2 together, in one or more embodiments, the mattress assembly 100 may include a base layer 102, a coil layer 104, an upper layer 106, an elastomeric cushioning element 108, an edge portion 119, one or more side panels 114, and the outer covering 112.

[0030] The base layer 102 may have generally planar top and bottom surfaces. The coil layer 104 may be disposed on the top surface of the base layer 102 and between the base layer 102 and the upper layer 106. In particular, the upper layer 106 may be disposed over and may at least substantially extend over the coil layer 104. The elastomeric cushioning element 108 may be disposed over an upper surface of the upper layer 106 and may extend over at least a portion of the upper layer 106. The edge portion 119 may extend around an outer peripheral edge of the elastomeric cushioning element 108. The one or more side panels 114 may extend along outer perimeters of the base layer 102 and the upper layer 106 and may be disposed between the upper layer 106 and the base layer 102. Furthermore, the one or more side panels 114 may extend within ~~plane~~ a plane

perpendicular to a plane defined by the top surface of the base layer 102. The outer covering 112 may extend from the base layer 102 and may at least substantially encase the coil layer 104, upper layer 106, and elastomeric cushioning element 108.

[0031] In some embodiments, the mattress assembly 100 may include a stabilization material 116 between the elastomeric cushioning element 108 and the upper layer 106. In some instances, the stabilization material 116 may include a relatively thin material (*e.g.,* cotton spandex blend "scrim") and may be used to provide a surface for adhering (*e.g.,* gluing) the elastomeric cushioning element 108 to surrounding materials, such as another elastomeric cushioning element 108 and/or an upper surface of the upper layer 106. In some embodiments, the stabilization material 116 may comprise a scrim fabric (*e.g.,* a woven or non-woven fabric material) and portions of the elastomeric cushioning element 108 may seep through (*e.g.,* be melt-fused into, bleed through, push through, leak through, pass through, *etc.*) the scrim fabric of the stabilization material 116. For example, when the elastomeric cushioning element 108 includes a gel material (as described below), portions of the gel material may be heat fused through the stabilization material 116. The portions of the elastomeric cushioning element 108 that extend through the scrim fabric of the stabilization material 116 may create a non-slip surface or reduced slip surface on a lower surface of the stabilization material 116 (*e.g.,* surface that would contact an upper surface of the upper layer 106). The non-slip surface or reduced slip surface created by the elastomeric cushioning element 108 may help the cushioning materials stay in place relative to one another.

[0032] Furthermore, in some embodiments, an adhesive may be disposed between the stabilization material 116 and the upper surface of the upper layer 106. However, an adhesive may not be disposed between the edge portion 119 and the upper layer 106. Furthermore, an adhesive may be disposed between the base layer 102 and the coil layer 104. Moreover, an adhesive may be disposed between the coil layer 104 and the upper layer 106. Additionally, an adhesive may be disposed between the one or more side panels 114 and the coil layer 104. In some embodiments the adhesive(s) may include a latex water based adhesive. For instance, in one or more embodiments, the adhesive(s) may include one or more of SIMALFA® 338 and SIMALFA® 310.

[0033] In one or more embodiments, the mattress assembly 100 may not include a stabilization material 116 between the coil layer 104 and the upper layer 106 of the mattress assembly 100. However, in some instances, an adhesive may be disposed between the stabilization

material 116 and the upper surface of the upper layer 106. For example, the adhesive may include any of the adhesives described above.

[0034] In some embodiments, the outer covering 112 may comprise a stretchable material that may be secured to or be integral with the elastomeric cushioning element 108. Such a stretchable material is described in U.S. Patent Application No. 15/062,621, to Pearce, filed March 7, 2016, the entire disclosure of which is incorporated herein by this reference.

[0035] In one or more embodiments, the base layer 102 and the upper layer 106 may include a polyurethane foam. In additional embodiments, the base layer 102 and the upper layer 106 may include one or more of a memory polyurethane foam, a latex ~~foamed~~ foam rubber, or any other suitable foam. In some embodiments, the base layer 102 may include a polyurethane foam having a nominal density of about 2.0 lb/ft^3 and an indention load deflection (ILD) of 55 (i.e., 55 ILD). Additionally, the upper layer 106 may include a polyurethane foam having a nominal density of about 2.0 lb/ft^3 and 18 ILD. The one or more side panels 114 may also include a polyurethane foam or any other spacer fabric known in the art. For example, the one or more side panels 114 may include any of the side panels described in U.S. Patent Application No. 15/662,934, to Moon et al., filed July 28, 2017, the disclosure of which is incorporated in its entirety by this reference herein.

[0036] The coil layer 104 may include a plurality of coils 118 (*e.g.,* steel coils), and each coil 118 of the plurality of coils 118 may be encased in at least one respective casing 120 (*e.g.,* polypropylene socks or bags). For example, each casing 120 may form a pocket for a respective coil 118. In other words, the plurality of coils 118 may include a plurality of pocketed coils 118. In some embodiments, each coil 118 may include a relatively thin-gauge, barrel-shaped (e.g., helical-shaped), knotless coil. Furthermore, in one or more embodiments, each coil 118 may be encased in multiple casings 120. For instance, each coil 118 may be double bagged or triple bagged. In one or more embodiments, the casings 120 may include a polypropylene material.

[0037] The casings 120 may include a two-ply polypropylene non-woven material. In one or more embodiments, the polypropylene non-woven material may include one or more of BERRY® products 1430408, 1430379, and 1430538. In some embodiments, each ply of the casings 120 may have a thickness within a range of about 0.10 mm and about 0.40 mm. As a non-limiting example, each ply of the casings 120 may have a thickness within a range of about 0.15 mm and about 0.30 mm. However, any suitable material may be used. The casings 120 may provide sound dampening effects.

[0038] For example, ~~when~~ the mattress assembly 100 was tested according ~~to the~~ to a test method of utilizing the application SOUND METER by Abc Apps from the Google Play Store on a Galaxy S6 Active phone to measure sound levels from the mattress assembly 100. During the test method, a 3x3 coil structure having each coil 118 covered by the above-described casings 120 was compressed multiple times for the duration of 15 seconds, and the 3x3 coil structure exhibited an average sound level within a range of about 35 decibels and about 45 decibels. For example, the 3x3 coil structure exhibited an average sound level of about 40 decibels. In comparison, conventional mattresses, when tested according to the above test method, exhibited an average sound level of about 50 decibels. Accordingly, by encasing each coil 118 with multiple casings 120 (e.g., a first casing 120 and a second casing 120), the mattress ~~assembly 200~~ assembly 100 of the present disclosure may be advantageous over conventional mattress assemblies. For example, the mattress assembly 100 may be quieter than conventional mattresses (e.g., may exhibit about 20% less sound than conventional mattresses).

[0039] In some embodiments, each casing 120 of each coil 118 of the plurality of coils 118 may be individual and discrete. In additional embodiments, the casings 120 of the plurality of coils 118 may be connected (i.e., joined) and may form a single body. Furthermore, each coil 118 of the plurality of coils 118 may extend longitudinally in a direction at least substantially orthogonal (i.e., normal) to an upper surface of the base layer 102. Furthermore, the plurality of coils 118 ~~may~~ may be ~~orien ted~~ oriented next to each other in an array (e.g., ~~row~~ rows and columns ~~or grid~~ or a grid pattern) to form the coil layer 104.

[0040] ~~FIG. 4~~ FIG. 3 is a simplified perspective view of the elastomeric cushioning element 108. The elastomeric cushioning element 108 may include a singly-molded elastomeric cushioning element 108. For example, the entirety of the elastomeric cushioning element 108 may be formed via a single molding process. In some embodiments, the elastomeric cushioning element 108 may include buckling walls 122. The buckling walls 122 of the elastomeric cushioning element 108 may be interconnected to one another and may define hollow columns 124 or voids in an expanded form. As used herein, the term "expanded form" means and includes a state in which a elastomeric cushioning element 108 has its original size and shape and wherein the buckling walls 122 are separated and define hollow columns 124.

[0041] The buckling walls 122 may extend in two directions, intersecting at right angles, and defining square voids 126. However, in some embodiments, the buckling walls 122 may intersect

at other angles and define voids 126 of other shapes, such as triangles, parallelograms, hexagons, *etc.* The elastomeric cushioning element 108 may comprise additional structures and configurations such as those structures and configurations described in, for example, U.S. Patent 8,434,748, titled "Cushions Comprising Gel Springs," issued May 7, 2013; U.S. Patent 8,628,067, titled "Cushions Comprising Core Structures and Related Methods," issued January 14, 2014; U.S. Patent 8,919,750, titled "Cushioning Elements Comprising Buckling Walls and Methods of Forming Such Cushioning Elements," issued December 30, 2014; and U.S. Patent 8,932,692, titled "Cushions Comprising Deformable Members and Related Methods," issued January 13, 2015, the entire disclosure of each of which is incorporated herein by this reference.

[0042] The buckling walls 122 may be formed of an elastomeric material. Elastomeric materials are described in, for example, U.S. Patent 5,994,450, titled "Gelatinous Elastomer and Methods of Making and Using the Same and Articles Made Therefrom," issued November 30, 1999 (hereinafter "the '450 Patent"); U.S. Patent 7,964,664, titled "Gel with Wide Distribution of MW in Mid-Block" issued June 21, 2011; U.S. Patent 4,369,284, titled "Thermoplastic Elastomer Gelatinous Compositions" issued January 18, 1983; U.S. Patent 8,919,750, titled "Cushioning Elements Comprising Buckling Walls and Methods of Forming Such Cushioning Elements," issued December 30, 2014 (hereinafter "the '750 Patent"); the disclosures of each of which are incorporated herein in their entirety by this reference. The elastomeric material may include an elastomeric polymer and a plasticizer. The elastomeric material may be a gelatinous elastomer (also referred to in the art as gel, elastomer gel, or elastomeric gel), a thermoplastic elastomer, a natural rubber, a synthetic elastomer, a blend of natural and synthetic elastomers, *etc.*

[0043] The elastomeric polymer may be an A–B–A triblock copolymer such as styrene ethylene propylene styrene (SEPS), styrene ethylene butylene styrene (SEBS), and styrene ethylene ethylene propylene styrene (SEEPS). For example, A–B–A triblock copolymers are currently commercially available from Kuraray America, Inc., of Houston, TX, under the trade name SEPTON® 4055, and from Kraton Polymers, LLC, of Houston, TX, under the trade names KRATON® E1830, KRATON® G1650, and KRATON® G1651. In these examples, the "A" blocks are styrene. The "B" block may be rubber (*e.g.*, butadiene, isoprene, *etc.*) or hydrogenated rubber (*e.g.*, ethylene/propylene or ethylene/butylene or ethylene/ethylene/propylene) capable of being plasticized with mineral oil or other hydrocarbon fluids. The elastomeric material may include elastomeric polymers other than styrene-based copolymers, such as non-styrenic elastomeric

polymers that are thermoplastic in nature or that can be solvated by plasticizers or that are multi-component thermoset elastomers.

[0044] The elastomeric material may include one or more plasticizers, such as hydrocarbon fluids. For example, elastomeric materials may include aromatic-free food-grade white paraffinic mineral oils, such as those sold by Sonneborn, Inc., of Mahwah, NJ, under the trade names BLANDOL® and CARNATION®.

[0045] In some embodiments, the elastomeric material may have a plasticizer-to-polymer ratio from about 0.1:1 to about 50:1 by weight. For example, elastomeric materials may have plasticizer-to-polymer ratios from about 1:1 to about 30:1 by weight, or even from about 1.5:1 to about 10:1 by weight. In further embodiments, elastomeric materials may have plasticizer-to-polymer ratios of about 4:1 by weight.

[0046] The elastomeric material may have one or more fillers (*e.g.*, lightweight microspheres). Fillers may affect thermal properties, density, processing, *etc*., of the elastomeric material. For example, hollow microspheres (*e.g.*, hollow glass microspheres or hollow acrylic microspheres) may decrease the thermal conductivity of the elastomeric material by acting as an insulator because such hollow microspheres (*e.g.*, hollow glass microspheres or hollow acrylic microspheres) may have lower thermal conductivity than the plasticizer or the polymer. As another example, metal particles (*e.g.*, aluminum, copper, *etc.*) may increase the thermal conductivity of the resulting elastomeric material because such particles may have greater thermal conductivity than the plasticizer or polymer. Microspheres filled with wax or another phase-change material (*i.e.*, a material formulated to undergo a phase change near a temperature at which a cushioning element may be used) may provide temperature stability at or near the phase-change temperature of the wax or other phase-change material within the microspheres (*i.e.*, due to the heat of fusion of the phase change). The phase-change material may have a melting point from about 20°C to about 45°C.

[0047] The elastomeric material may also include antioxidants. Antioxidants may reduce the effects of thermal degradation during processing or may improve long-term stability. Antioxidants include, for example, pentaerythritol tetrakis(3-(3,5-di-tert-butyl-4-hydroxyphenyl) propionate), commercially available as IRGANOX® 1010, from BASF Corp., of Iselin, NJ or as EVERNOX®-10, from Everspring Corp. USA, of Los Angeles, CA; octadecyl-3-(3,5-di-tert-butyl-4 ~~-hydroxyphenyl)~~4-hydroxyphenyl) propionate, commercially available as IRGANOX® 1076, from BASF Corp. or as EVERNOX® 76, from Everspring

Chemical; and tris(2,4-di-tert-butylphenyl)phosphite, commercially available as IRGAFOS® 168, from BASF Corp. or as EVERFOS® 168, from Everspring Chemical. One or more antioxidants may be combined in a single formulation of elastomeric material. The use of antioxidants in mixtures of plasticizers and polymers is described in columns 25 and 26 of the '450 Patent. The elastomeric material may include up to about 5 wt% antioxidants. For instance, the elastomeric material may include from about 0.10 wt% to about 1.0 wt% antioxidants.

[0048] In some embodiments, the elastomeric material may include a resin. The resin may be selected to modify the elastomeric material to slow a rebound of the elastomeric cushioning element 108 after deformation. The resin, if present, may include a hydrogenated pure monomer hydrocarbon resin, such as those commercially available from Eastman Chemical Company, of Kingsport, TN, under the trade name REGALREZ®. The resin, if present, may function as a tackifier, increasing the stickiness of a surface of the elastomeric material.

[0049] In some embodiments, the elastomeric material may include a pigment or a combination of pigments. Pigments may be aesthetic and/or functional. That is, pigments may provide the elastomeric cushioning element 108 with an appearance appealing to consumers. In addition, an elastomeric cushioning element 108 having a dark color may absorb radiation differently than an elastomeric cushioning element 108 having a light color.

[0050] The elastomeric material may include any type of gelatinous elastomer. For example, the elastomeric material may include a melt-blend of one part by weight of a styrene-ethylene-ethylene-propylene-styrene (SEEPS) elastomeric triblock copolymer (*e.g.*, SEPTON® 4055) with four parts by weight of a 70-weight straight-cut white paraffinic mineral oil (*e.g.*, CARNATION® white mineral oil) and, optionally, pigments, antioxidants, and/or other additives.

[0051] The elastomeric material may include a material that may return to its original shape after deformation, and that may be elastically stretched. The elastomeric material may be rubbery in feel, but may deform to the shape of an object applying a deforming pressure better than conventional rubber materials, and may have a durometer hardness lower than conventional rubber materials. For example, the elastomeric material may have a hardness on the Shore A scale of less than about 50, from about 0.1 to about 50, or less than about 5.

[0052] Referring again to FIG. 2 again, a configuration of having the coil layer 104 with the upper layer 106 on top of the coil layer 104 and the elastomeric cushioning element 108 on top of

the upper layer 106 may provide advantages over conventional mattress assemblies. For example, in comparison to conventional mattress assemblies, the plurality of coils 118 of the coil layer 104 may better conform to an upper surface of the mattress assembly 100. For instance, when subjected to a weight (e.g., a person on the mattress assembly 100) and a resulting deformation, the plurality of coils 118 of the coil layer 104 may better conform to the deformation. Furthermore, the configuration may provide an increase in lateral stability in comparison to conventional mattress assemblies. Additionally, the foregoing configuration may make methods of manufacturing the mattress assembly 100 easier in comparison to conventional methods of manufacturing mattresses because it removes a need to laminate/glue the coil layer 104 to the elastomeric cushioning element 108. Having the upper layer 106 between the coil layer 104 and the elastomeric cushioning element 108 provides a porous surface to adhere to both of the coil layer 104 and the elastomeric cushioning element 108. Furthermore, the upper layer 106 dampens sound from the coil layer 104.

[0053] FIGS. 4-7 show schematic side cross-sectional views of mattress assemblies according to embodiments of the present disclosure. As shown in FIG. 4, in some embodiments, the elastomeric cushioning element 108 may not cover an entirety of an upper surface of the upper layer 106 of the mattress assembly 100. In such embodiments, the mattress assembly 100 may further include one or more segments 128 of foam (e.g., a polyurethane foam) in place of the elastomeric cushioning element 108 to provide an at least substantially planar upper surface of the mattress assembly 100. For instance, the one or more segments 128 of foam may be disposed adjacent to the elastomeric cushioning element 108 on the upper layer 106 of the mattress assembly 100.

[0054] In some embodiments, the elastomeric cushioning element 108 may be disposed only over a center portion of the upper layer 106 of the mattress assembly 100. For example, the elastomeric cushioning element 108 may not cover a portion of the upper layer 106 extending around a perimeter of the upper layer 106 of the mattress assembly 100. In such embodiments, the segments of foam 128 may be disposed over the portion of the upper layer 106 extending around a perimeter of the upper layer 106. The foregoing configuration may be utilized with mattress sizes where only one sleeper is expected (i.e., twin and full sized mattress).

[0055] In additional embodiments, the elastomeric cushioning element 108 may be disposed only in areas anticipated as predominant sleeping areas of sleepers. For example, the elastomeric cushioning element 108 may include two separate sections centered on opposing longitudinal halves of the mattress assembly 100. The foregoing configuration may be utilized with

mattress sizes where two sleepers are expected (i.e., king, queen, and full sized mattresses). Furthermore, the foregoing embodiment is described in further detail with reference to FIG. 8.

[0056] As show in FIGS. 5-7, a thickness of the elastomeric cushioning element 108 may vary. In some embodiments, the elastomeric cushioning element 108 may have a thickness T of within a range of about 1.5 inches to about 2.5 inches. Furthermore, in some instances, the thickness T of the elastomeric cushioning element 108 may comprise between about 15.0% and about 20.0% of an overall thickness of the mattress assembly 100. For instance, the elastomeric cushioning element 108 may have a thickness T of about 2.0 inches and a thickness T that comprises about 18.2% of the overall thickness of the mattress assembly 100. In additional embodiments, the elastomeric cushioning element 108 may have a thickness T of within a range of about 2.5 inches to about 3.5 inches. Moreover, in some embodiments, the thickness T of the elastomeric cushioning element 108 may comprise between about 20.0% and about 30.0% of an overall thickness of the mattress assembly 100. For example, the elastomeric cushioning element 108 may have a thickness T of about 3.0 inches and a thickness T that comprises about 25.0% of the overall thickness of the mattress assembly 100. In further embodiments, the elastomeric cushioning element 108 may have a thickness T of within a range of about 3.5 inches to about 4.5 inches. Additionally, in one or more embodiments, the thickness T of the elastomeric cushioning element 108 may comprise between about 30.0% and about 35.0% of an overall thickness of the mattress assembly 100. As a non-limiting example, the elastomeric cushioning element 108 may have a thickness T of about 4.0 inches and a thickness T that comprises about 30.8% of the overall thickness of the mattress assembly 100.

[0057] Referring still to FIGS. 5-7, in some embodiments, the upper layer 106 of the mattress assembly 100 may have a thickness within a range of about 0.25 ~~inches~~ inch and about 0.75 ~~inches.~~ inch. For instance, the upper layer 106 of the mattress assembly 100 may have a thickness of about 0.50 ~~inches.~~ inch. Additionally, the coil layer 104 of the mattress assembly 100 may have a thickness (e.g., height) within range of about 6.0 inches and about 9.0 inches. For example, the coil layer 104 of the mattress assembly 100 may have a thickness of about 7.5 inches. Moreover, the base layer 102 of the mattress assembly 100 may a thickness within a range of about 0.50 ~~inches~~ inch and about 1.50 inches. As a non-limiting example, the base layer 102 may have a thickness of about 1.00 inch.

[0058] FIGS. 8 and 9 show top views of mattress assemblies according to embodiments of the present disclosure. As shown in FIG. 8, in some embodiments, the mattress assembly 800 may

include one or more elastomeric cushioning element sections 802, 804 (e.g., a plurality of distinct elastomeric cushioning elements). Furthermore, the one or more elastomeric cushioning element sections 802, 804 may be disposed (e.g., located) in anticipated sleeping areas of one or more sleepers. For example, for a mattress size where two sleepers are anticipated (e.g., a queen and/or king size bed), the mattress assembly 800 may include a first elastomeric cushioning element section 802 and a second elastomeric cushioning element section 804. The first elastomeric cushioning element section 802 may be centered longitudinally within a first half 806 of the overall mattress ~~assembly~~ assembly 800 (divided longitudinally), and the second elastomeric cushioning element section 804 may be centered longitudinally within a second half 808 of the overall mattress ~~assembly.~~ assembly 800. In some embodiments, each of the first elastomeric cushioning element section 802 and the second elastomeric cushioning element section 804 may have a width within a range of about 22.0 inches to about 28.0 inches. For instance, each of the first and second elastomeric cushioning element sections 802, 804 may have a width of about 25.0 inches. Furthermore, each of the first and second elastomeric cushioning element sections 802, 804 may have a length (e.g., longitudinal length) within a range of about 50.0 inches to about 65 inches. For example, the first and second elastomeric cushioning element sections 802, 804 may have a length of about 56.0 inches. Furthermore, a polyurethane foam 810 may be disposed where coverage is not provided by the first and second elastomeric cushioning element sections 802, 804. In some instances, the polyurethane foam 810 may include a polyurethane foam having a nominal density of about 2.0 lb/ft^3 and 18 ILD.

[0059] As shown in FIG. 9, in some embodiments, the elastomeric cushioning element 902 may provide complete coverage over a mattress assembly 900. For example, the elastomeric cushioning element 902 may cover at least substantially an entire upper surface of the upper layer 106 (FIG. 2) of the mattress assembly 900.

[0060] FIG. 10 shows a schematic ~~flow chart~~ flowchart of a ~~method 1010~~ method 1000 of forming a mattress assembly 100. In some embodiments, the ~~method 1010~~ method 1000 may include an act 1010 of disposing a coil layer 104 over a base layer 102. For example, act 1010 may include disposing a plurality of coils 118 within a plurality of casings 120, wherein each coil 118 of the plurality of coils 118 is disposed within at least two respective casings 120, and disposing the plurality of coils 118 over the coil layer 104. Additionally, act 1010 can include disposing the plurality of coils 118 within polypropylene bags. Furthermore, act 1010 may include orienting the plurality of coils 118 within an array (e.g., rows and columns) over the base layer 102. Moreover, act 1010 may

include disposing the coil layer 104 over the base layer 102 according to any of the configurations described above in regard to FIGS. 1, 2, and 4-7.

[0061] Additionally, the method 1000 may include an act 1020 of disposing an upper layer 106 over the coil layer 104. In some embodiments, act 1020 may not include disposing a stabilization material between the coil layer 104 and the upper layer 106. However, in some embodiments, act 1020 may include disposing an adhesive between the coil layer 104 and the upper layer 106. For example, act 1020 may include disposing any of the adhesives described above between the coil layer 104 and the upper layer 106. Furthermore, act 1020 may include disposing an upper layer 106 over the coil layer 104 according to any of the configurations described above in regard to FIGS. 1, 2, and 4-7.

[0062] Moreover, the method 1000 may include an act 1030 of disposing an elastomeric cushioning element 108 over the upper layer 106. For example, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 that comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly 100. For instance, a thickness of the elastomeric cushioning element 108 comprises between about 20.0% and about 32.0% of an overall thickness of the mattress assembly 100. In additional embodiments, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 that comprises between about 25.0% and about 32.0% of an overall thickness of the mattress assembly 100. In further embodiments, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 that comprises between about 30.0% and about 32.0% of an overall thickness of the mattress assembly 100. For instance, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 that comprises about 30.8% of an overall thickness of the mattress assembly 100.

[0063] In some embodiments, act 1030 can include disposing a plurality of elastomeric cushioning element 108 segments over the upper layer 106. Moreover, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 according to any of the configurations described above and including any of the materials described in regard to FIGS. 1-9.

[0064] Additionally, the method 1000 may include act 1040 of disposing an outer covering 112 over at least the upper layer 106. For example, act 1040 can include disposing an outer covering 112 over the mattress assembly 100 such that the outer covering 112 covers at least substantially an entirety of the upper layer 106 and side panels 114 of the mattress assembly 100. In

one or more embodiments, the method 600 can include disposing an adhesive between any of the layers of the mattress assembly 100.

[0065] Additional non-limiting example embodiments of the disclosure are described below.

[0066] Embodiment 1: A mattress assembly, comprising: a base layer; a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed ~~coils 118;~~ coil; an upper layer disposed over the coil layer; and an elastomeric cushioning element disposed over the upper layer, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

[0067] Embodiment 2: The mattress assembly of Embodiment 1, wherein the coil layer has a thickness within a range of about 6.00 inches and about 8.00 inches.

[0068] Embodiment 3: The mattress assembly of Embodiment 2, wherein the coil layer has a thickness of about 7.50 inches.

[0069] Embodiment 4: The mattress assembly of Embodiment 1, further comprising: one or more side panels extending around outer perimeters of the base layer and the upper layer; and an outer covering disposed over the upper layer at least partially around the one or more side panels.

[0070] Embodiment 5: The mattress assembly of Embodiment 1, wherein the base layer and the upper layer both comprise a polyurethane foam.

[0071] Embodiment 6: The mattress assembly of Embodiment 1, wherein the elastomeric cushioning element has a thickness of about 4.0 inches.

[0072] Embodiment 7: The mattress assembly of Embodiment 1, further comprising an adhesive disposed between the elastomeric cushioning element and the upper layer.

[0073] Embodiment 8: The mattress assembly of Embodiment 7, wherein the adhesive comprises a latex water based adhesive.

[0074] Embodiment 9: The mattress assembly of Embodiment 1, wherein the base layer has a thickness within a range of about 0.75 ~~inches~~ inch and about 1.50 inches, and wherein the upper layer has a thickness within a range of about 0.25 ~~inches~~ inch and about 0.75 ~~inches~~ inch.

[0075] Embodiment 10: A mattress assembly, comprising: a base layer; a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils, each pocketed coil of the plurality of pocketed coils comprises: a plurality of casings; and a coil disposed within the plurality of casings; an upper layer disposed over the coil layer; and at least one elastomeric

cushioning element disposed over the upper layer, wherein the at least one elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

[0076] Embodiment 11: The mattress assembly of Embodiment 10, wherein the plurality of pocketed ~~coils are~~ coils is oriented next to each other in a grid pattern.

[0077] Embodiment 12: The mattress assembly of Embodiment 10, wherein the plurality of casings of each pocketed coil comprises: a first ~~casing 120;~~ casing; and a second ~~casing 120~~ casing disposed within the first ~~casing 120,~~ casing, wherein the coil is disposed within the second ~~casing 120~~ casing.

[0078] Embodiment 13: The mattress assembly of Embodiment 10, wherein the at least one elastomeric cushioning element comprises a plurality of distinct elastomeric cushioning elements disposed at different locations over the upper layer.

[0079] Embodiment 14: The mattress assembly of Embodiment 10, wherein the at least one elastomeric cushioning element does not cover an entirety of an upper surface of the upper layer.

[0080] Embodiment 15: The mattress assembly of Embodiment 11, wherein the at least one elastomeric cushioning element comprises interconnected buckling walls.

[0081] Embodiment 16: A method of forming a mattress assembly, comprising: disposing a coil layer over a base layer; disposing an upper layer over the coil layer; disposing an elastomeric cushioning element over the upper layer, wherein a thickness of the elastomeric cushioning element comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly; and disposing an outer covering over at least the upper layer.

[0082] Embodiment 17: The method of Embodiment 16, wherein disposing a coil layer over a base core layer ~~comprise:~~ comprises: disposing a plurality of coils within a plurality of casings, wherein each coil of the plurality of coils is disposed within at least two respective casings; and disposing the plurality of coils over the coil layer.

[0083] Embodiment 18: The method of Embodiment 17, wherein disposing a plurality of coils within a plurality of casings comprises disposing the plurality of coils within polypropylene bags.

[0084] Embodiment 19: The method of Embodiment 16, wherein the elastomeric cushioning element comprises about 30.8% of the overall thickness of the mattress assembly.

[0085] Embodiment 20: The method of Embodiment 16, further comprising disposing an adhesive between the elastomeric cushioning element and the upper layer.

[0086] While the present disclosure has been described herein with respect to certain illustrated embodiments, those of ordinary skill in the art will recognize and appreciate that it is not so limited. Rather, many additions, deletions, and modifications to the illustrated embodiments may be made without departing from the scope of the disclosure as hereinafter claimed, including legal equivalents thereof. In addition, features from one embodiment may be combined with features of another embodiment while still being encompassed within the scope of the disclosure as contemplated. Further, embodiments of the disclosure have utility with different and various mattress types and configurations.

Electronic Acknowledgement Receipt

EFS ID:	32720206
Application Number:	15816983
International Application Number:	
Confirmation Number:	9411
Title of Invention:	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
First Named Inventor/Applicant Name:	Tony M. Pearce
Customer Number:	24247
Filer:	Kyle M. Woodhouse/Caitlin Johnson
Filer Authorized By:	Kyle M. Woodhouse
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Receipt Date:	24-MAY-2018
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Time Stamp:	17:03:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2018-05-24-Preliminary-Amendment-13943US.pdf	472585 56d0e927dc3299d64ba4bbf8e449d45e8429bebd	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Applicant Arguments/Remarks Made in an Amendment	9	9
	Claims	5	8
	Specification	3	4
	Preliminary Amendment	1	2

Warnings:					
Information:					
2	Specification	2018-05-24-APPENDIXA-13943US.pdf	162822 a5fa3f1794c069b810c23f75cac6d0484a00cdd7	no	20
Warnings:					
Information:					
3	Applicant Arguments/Remarks Made in an Amendment	2018-05-24-APPENDIXB-13943US.pdf	166650 a4d03defe9ba78600345ec1915381f4e17e444d6	no	20
Warnings:					
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		Total Files Size (in bytes):	802057		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

REMARKS

Please amend the application as set forth herein prior to examination on the merits. All amendments are made without prejudice or disclaimer, and do not surrender any scope of any claim as originally filed. If questions remain after consideration of the foregoing, the Office is kindly requested to contact applicant's attorney at the address or telephone number given herein.

Respectfully submitted,

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Enclosures: Appendices A and B

IN THE CLAIMS:

Claims 9 and 17 have been amended herein. All of the pending claims are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

Listing of the Claims:

1. (Original) A mattress assembly, comprising:

a base layer;

a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils;

an upper layer disposed over the coil layer; and

an elastomeric cushioning element disposed over the upper layer, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

2. (Original) The mattress assembly of claim 1, wherein the coil layer has a thickness within a range of about 6.00 inches and about 8.00 inches.

3. (Original) The mattress assembly of claim 2, wherein the coil layer has a thickness of about 7.50 inches.

4. (Original) The mattress assembly of claim 1, further comprising:

one or more side panels extending around outer perimeters of the base layer and the upper layer; and

an outer covering disposed over the upper layer at least partially around the one or more side panels.

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5. (Original) The mattress assembly of claim 1, wherein the base layer and the upper layer both comprise a polyurethane foam.

6. (Original) The mattress assembly of claim 1, wherein the elastomeric cushioning element has a thickness of about 4.0 inches.

7. (Original) The mattress assembly of claim 1, further comprising an adhesive disposed between the elastomeric cushioning element and the upper layer.

8. (Original) The mattress assembly of claim 7, wherein the adhesive comprises a latex water based adhesive.

9. (Currently Amended) The mattress assembly of claim 1, wherein the base layer has a thickness within a range of about 0.75 ~~inches~~ inch and about 1.50 inches, and wherein the upper layer has a thickness within a range of about 0.25 ~~inches~~ inch and about 0.75 ~~inches~~ inch.

10. (Original) A mattress assembly, comprising:

a base layer;

a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils, each pocketed coil of the plurality of pocketed coils comprises:

a plurality of casings; and

a coil disposed within the plurality of casings;

an upper layer disposed over the coil layer; and

at least one elastomeric cushioning element disposed over the upper layer, wherein the at least one elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

11. (Original) The mattress assembly of claim 10, wherein the plurality of pocketed coils are oriented next to each other in a grid pattern.

12. (Original) The mattress assembly of claim 10, wherein the plurality of casings of each pocketed coil comprises:

a first casing; and

a second casing disposed within the first casing, wherein the coil is disposed within the second casing.

13. (Original) The mattress assembly of claim 10, wherein the at least one elastomeric cushioning element comprises a plurality of distinct elastomeric cushioning elements disposed at different locations over the upper layer.

14. (Original) The mattress assembly of claim 10, wherein the at least one elastomeric cushioning element does not cover an entirety of an upper surface of the upper layer.

15. (Original) The mattress assembly of claim 11, wherein the at least one elastomeric cushioning element comprises interconnected buckling walls.

16. (Original) A method of forming a mattress assembly, comprising:

disposing a coil layer over a base layer;

disposing an upper layer over the coil layer;

disposing an elastomeric cushioning element over the upper layer, wherein a thickness of the elastomeric cushioning element comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly; and

disposing an outer covering over at least the upper layer.

17. (Currently Amended) The method of claim 16, wherein disposing a coil layer over a base core layer ~~comprise:~~comprises:

disposing a plurality of coils within a plurality of casings, wherein each coil of the plurality of coils is disposed within at least two respective casings; and

disposing the plurality of coils over the coil layer.

18. (Original) The method of claim 17, wherein disposing a plurality of coils within a plurality of casings comprises disposing the plurality of coils within polypropylene bags.

19. (Original) The method of claim 16, wherein the elastomeric cushioning element comprises about 30.8% of the overall thickness of the mattress assembly.

20. (Original) The method of claim 16, further comprising disposing an adhesive between the elastomeric cushioning element and the upper layer.

IN THE TITLE:

The title has been amended herein. Pursuant to 37 C.F.R. §§ 1.121 and 1.125 (as amended to date), please amend the title as follows:

MATTRESSES INCLUDING ~~SPACER FABRIC AND RELATED METHODS~~AN ELEASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

IN THE SPECIFICATION:

Please enter the substitute specification in clean form and including paragraph numbers **[0001]** through **[0086]** attached hereto as Appendix A. A marked-up substitute specification to clearly identify amendments to the specification is attached hereto as Appendix B. It is respectfully submitted that the substitute specification does not introduce new matter into the above-referenced patent application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/816,983	Filing Date 11/17/2017	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $80 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $420 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	05/24/2018	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/FREDERICK E BRISCOE/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Pearce et al.

Serial No.: 15/816,983

Filed: November 17, 2017

For: MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

Confirmation No.: 9411

Group Art Unit: 3673

Attorney Docket No.: 3388.01-P13943US

VIA ELECTRONIC FILING

December 13, 2017

PRELIMINARY AMENDMENT TRANSMITTING FORMALIZED DRAWINGS

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

Prior to examination of the above-referenced patent application on the merits, entry of the amendments as set forth herein is respectfully solicited.

Formalized drawings are enclosed herewith as set forth on page 2 of this paper; and

Remarks start at page 3 of this paper.

IN THE DRAWINGS:

A full set of formal drawings are enclosed herewith. No new matter has been added.

REMARKS

Please enter the formalized drawings prior to examination on the merits. If questions remain after consideration of the foregoing, the Office is kindly requested to contact applicant's attorney at the address or telephone number given herein.

Respectfully submitted,

/Kyle M. Woodhouse/

Kyle M. Woodhouse
Registration No. 70,087
Attorney for Applicant
TRASKBRITT, P.C.
P.O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: 801-532-1922

Date: December 13, 2017
KMW/cvj

Attachments: Full set of replacement formal drawings

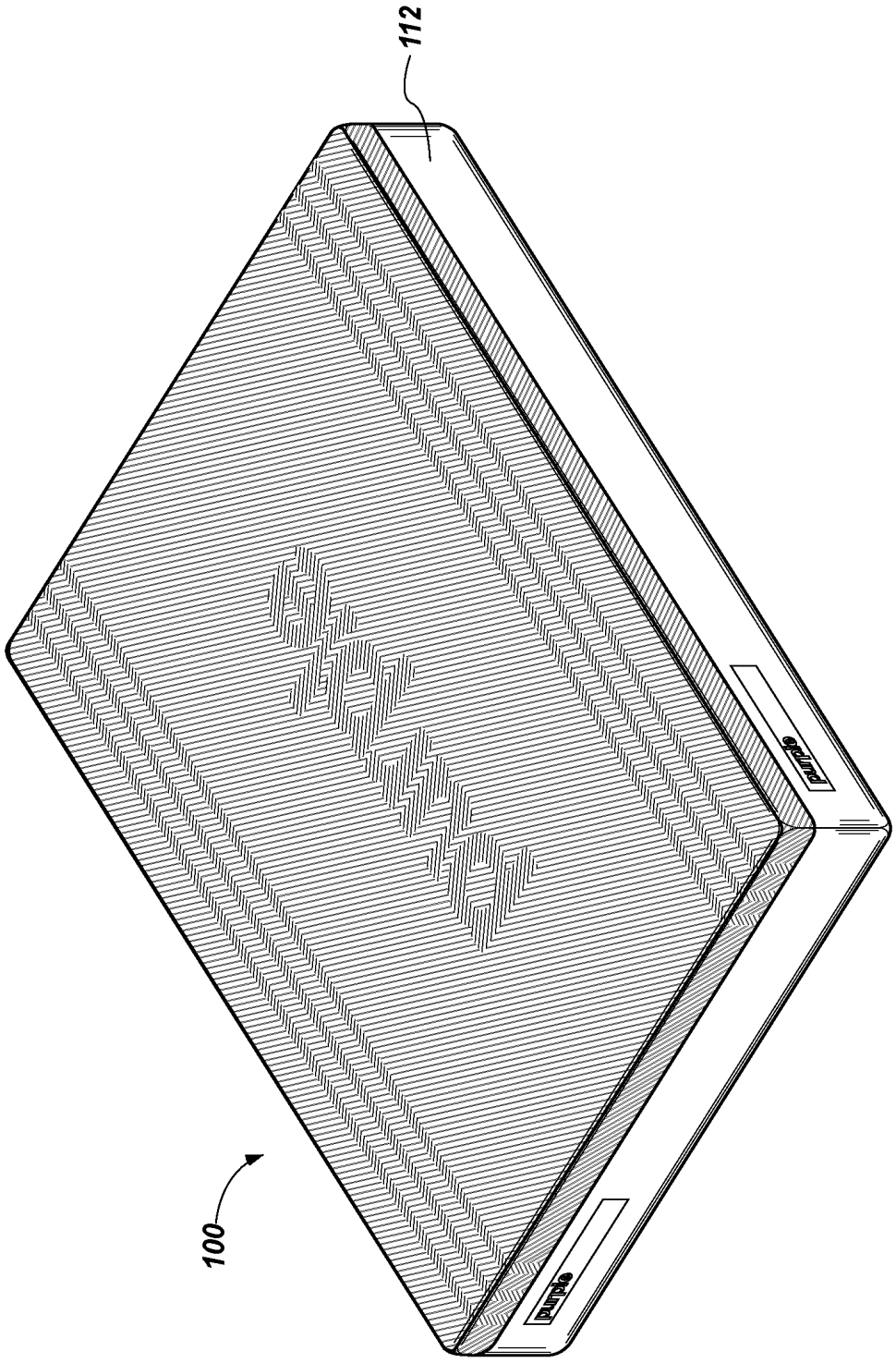


FIG. 1

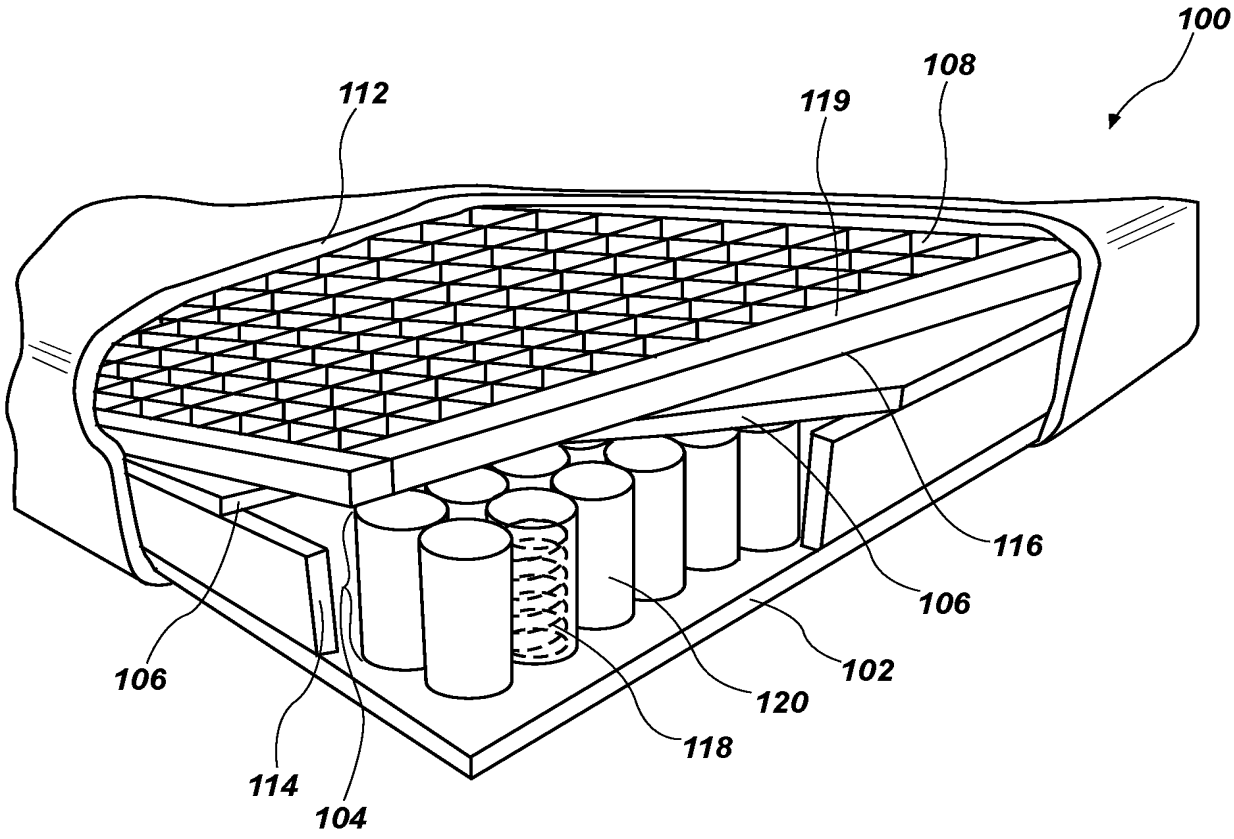


FIG. 2

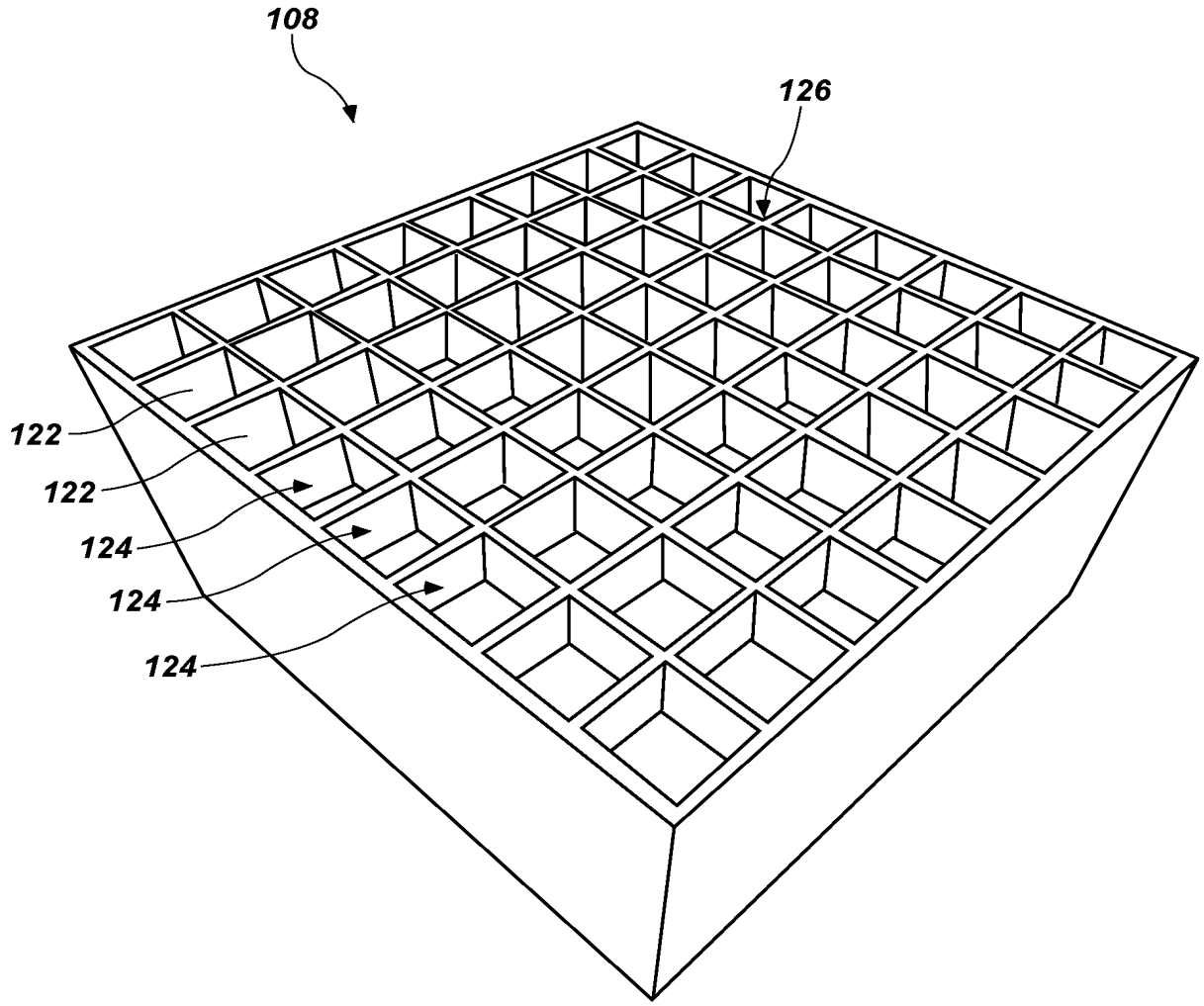


FIG. 3

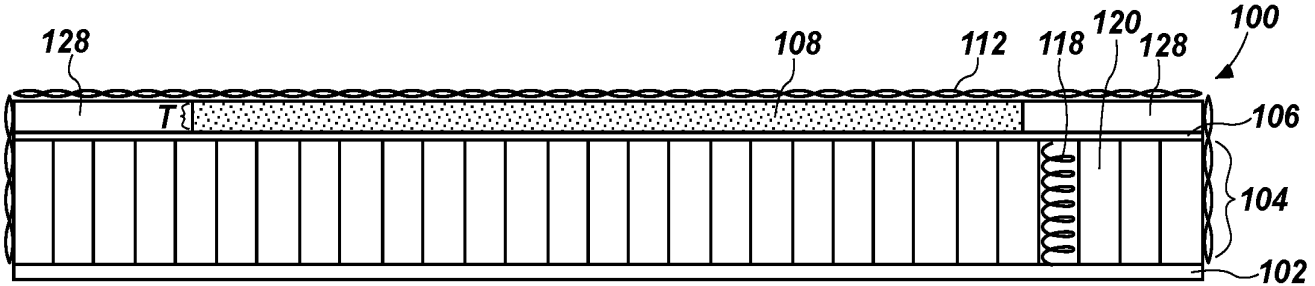


FIG. 4

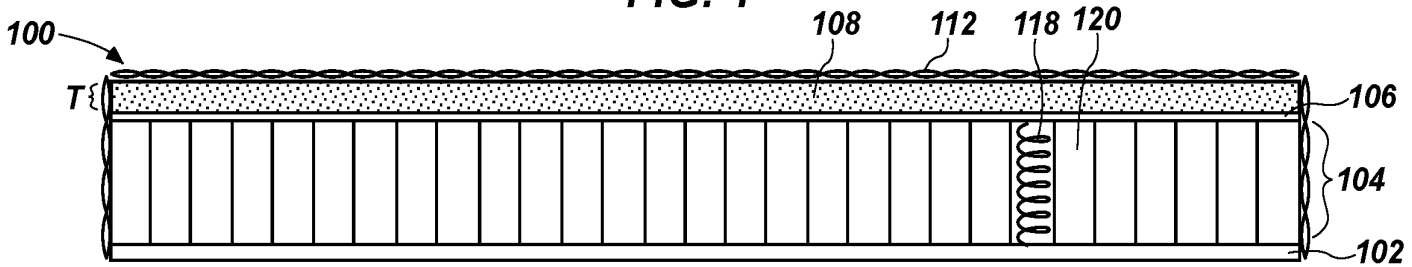


FIG. 5

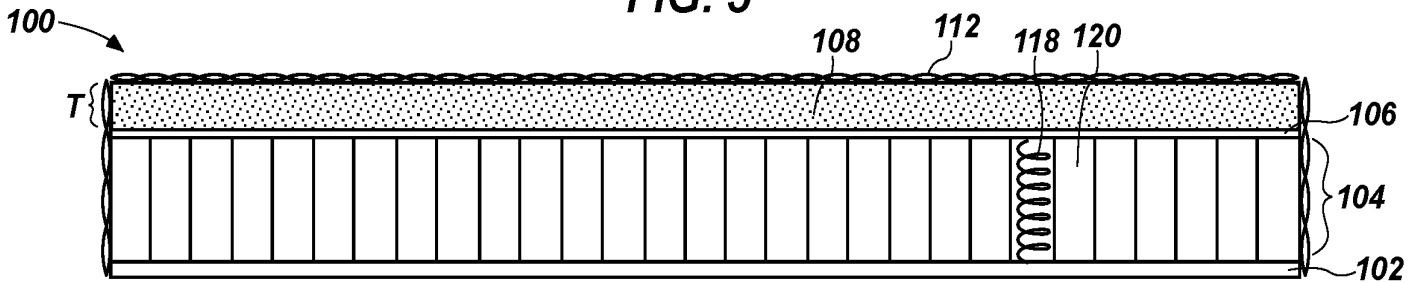


FIG. 6

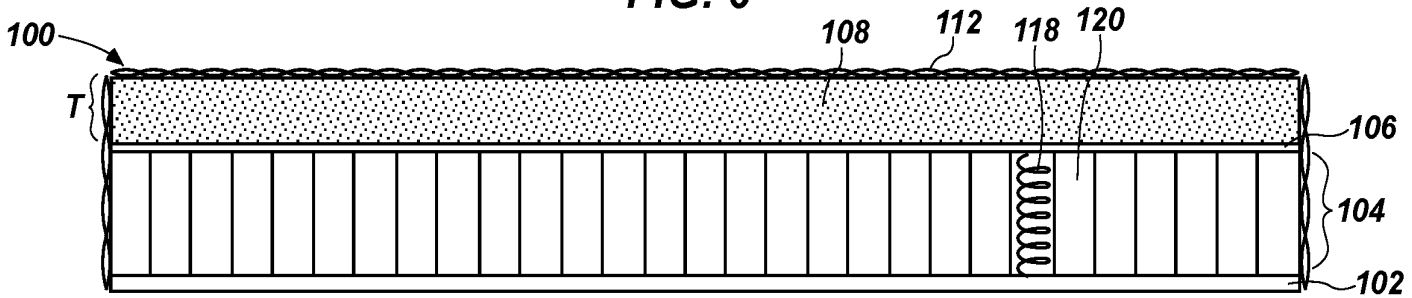


FIG. 7

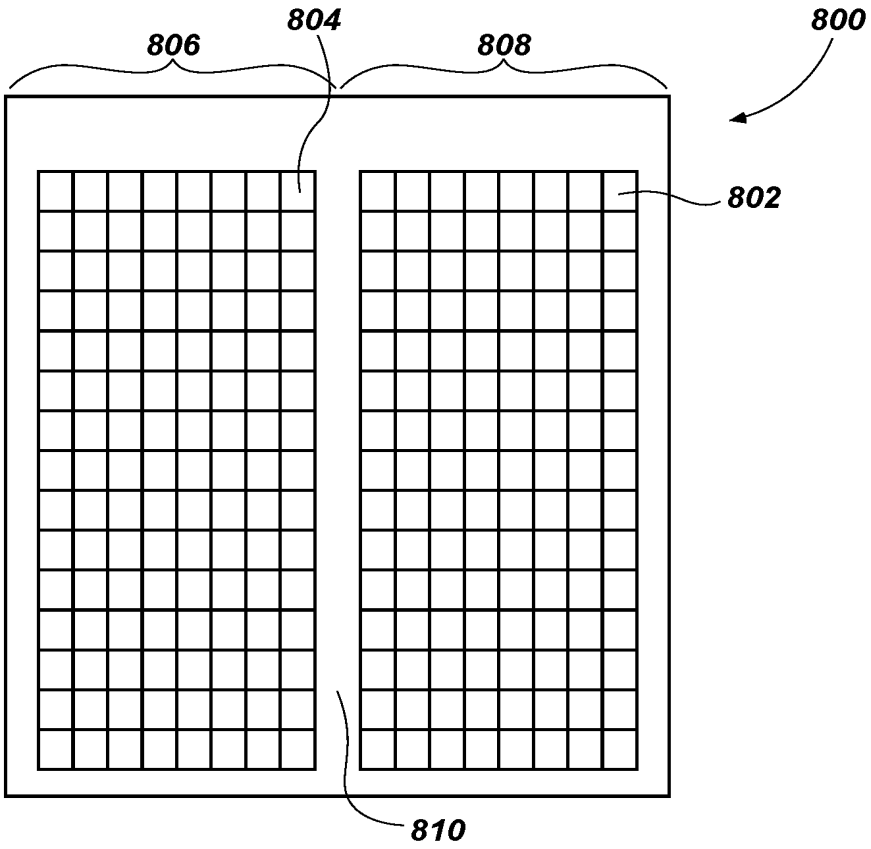


FIG. 8

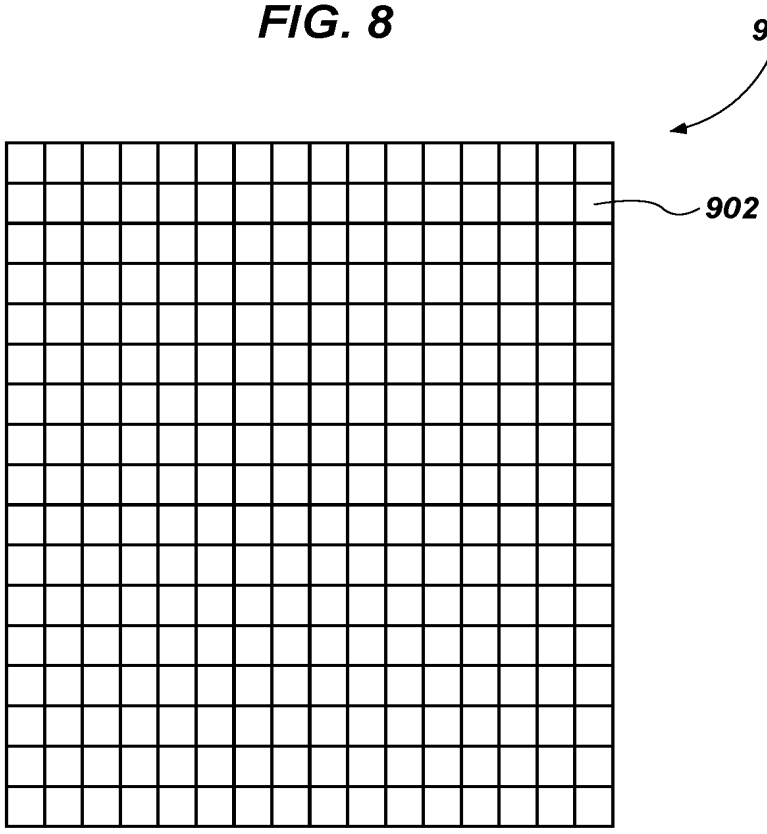


FIG. 9

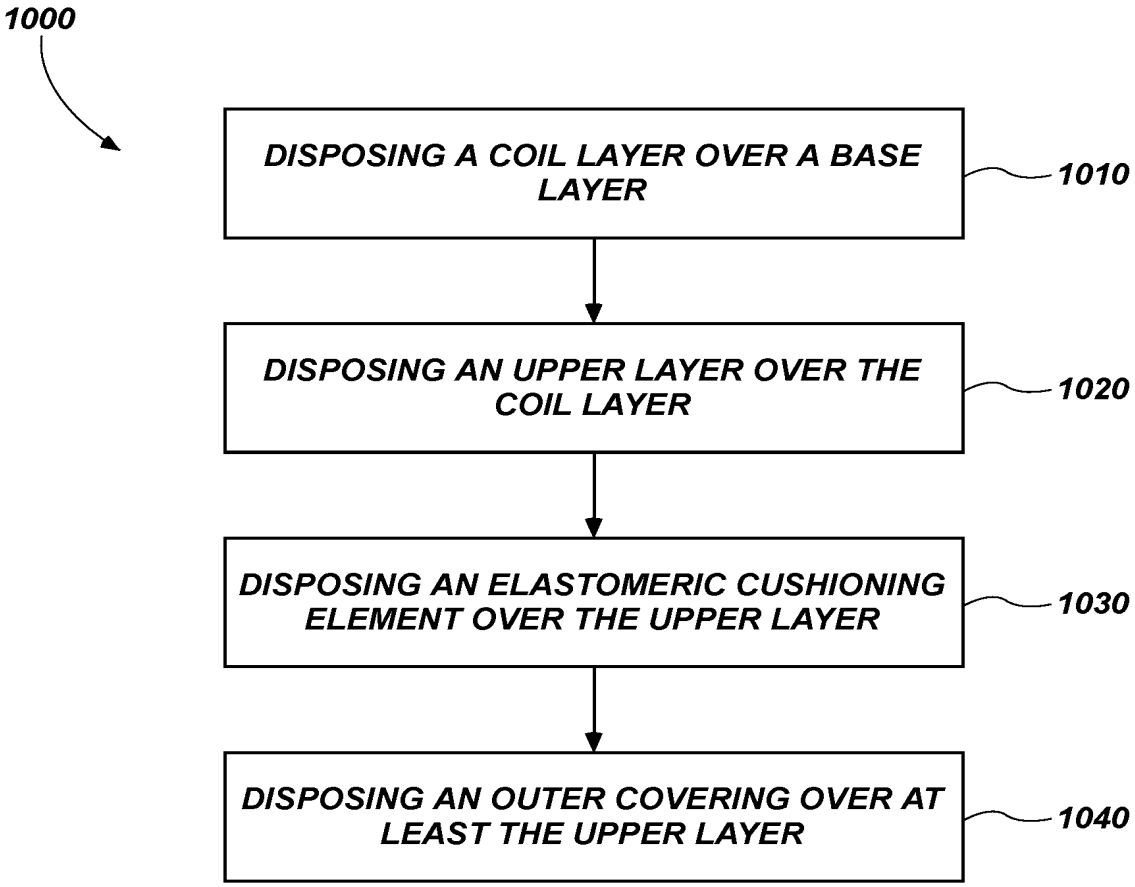

1000
DISPOSING A COIL LAYER OVER A BASE LAYER
1010
DISPOSING AN UPPER LAYER OVER THE COIL LAYER
1020
DISPOSING AN ELASTOMERIC CUSHIONING ELEMENT OVER THE UPPER LAYER
1030
DISPOSING AN OUTER COVERING OVER AT LEAST THE UPPER LAYER
1040

FIG. 10

Electronic Acknowledgement Receipt

EFS ID:	31218656
Application Number:	15816983
International Application Number:	
Confirmation Number:	9411
Title of Invention:	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
First Named Inventor/Applicant Name:	Tony M. Pearce
Customer Number:	24247
Filer:	Kyle M. Woodhouse/Caitlin Johnson
Filer Authorized By:	Kyle M. Woodhouse
Attorney Docket Number:	3388.01-P13943US
Receipt Date:	13-DEC-2017
Filing Date:	17-NOV-2017
Time Stamp:	16:23:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Dec-13-2017-Preliminary-Amendment-13943US.pdf	464162 19bf99d3154af9af41299a48ff7781d64f7a9a0a	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Drawings-only black and white line drawings	2	2
	Applicant Arguments/Remarks Made in an Amendment	3	3

Warnings:					
Information:					
2	Drawings-only black and white line drawings	Dec-13-2017-ReplacementSheets-13943US.pdf	562839 828ddd1965d30cb091084cd31e2e366807059e0d	no	6
Warnings:					
Information:					
		Total Files Size (in bytes):	1027001		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/816,983

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1600

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
15/816,983	11/17/2017	3673	1600	3388.01-P13943US	20	3

CONFIRMATION NO. 9411

24247
TRASKBRITT, P.C.
P.O. BOX 2550
SALT LAKE CITY, UT 84110

FILING RECEIPT



Date Mailed: 12/13/2017

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Tony M. Pearce, Alpine, UT;
Lars Christen Hamilton, Alpine, UT;
Tanner Rick Wheadon, Lehi, UT;

Applicant(s)

Purple Innovation, LLC, Alpine, UT;

Power of Attorney: The patent practitioners associated with Customer Number 24247

Domestic Applications for which benefit is claimed - None.
A proper domestic benefit claim must be provided in an Application Data Sheet in order to constitute a claim for domestic benefit. See 37 CFR 1.76 and 1.78.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 12/04/2017

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/816,983**

Projected Publication Date: 05/23/2019

Non-Publication Request: No

Early Publication Request: No

Title

MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

Preliminary Class

005

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

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United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
15/816,983	11/17/2017	3673	1600	3388.01-P13943US	20	3

CONFIRMATION NO. 9411

24247
TRASKBRITT, P.C.
P.O. BOX 2550
SALT LAKE CITY, UT 84110

FILING RECEIPT



Date Mailed: 12/05/2017

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Tony M. Pearce, Alpine, UT;
Lars Christen Hamilton, Alpine, UT;
Tanner Rick Wheadon, Lehi, UT;

Applicant(s)

Purple Innovation, LLC, Alpine, UT;

Power of Attorney: The patent practitioners associated with Customer Number 24247

Domestic Applications for which benefit is claimed - None.
A proper domestic benefit claim must be provided in an Application Data Sheet in order to constitute a claim for domestic benefit. See 37 CFR 1.76 and 1.78.

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 12/04/2017

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/816,983**

Projected Publication Date: 05/23/2019

Non-Publication Request: No

Early Publication Request: No

Title

MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

Preliminary Class

005

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/816,983

APPLICATION AS FILED - PART I

	(Column 1)	(Column 2)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE($)	FEE($)		RATE($)	FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1600

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1)		(Column 2)	(Column 3)					
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

PTO/AIA/80 (07-12)
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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

■ Practitioners associated with Customer Number: 24247

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

■ The address associated with Customer Number: 24247

OR

☐	Firm or Individual Name			
	Address			
	City		State	Zip
	Country			
	Telephone		Email	

Assignee Name and Address: Purple Innovation, LLC.
123 E. 200 N.
Alpine, UT 84004

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	Casey McGarvey	Date	
Name	Casey McGarvey	Telephone	(801) 756-2600
Title	Officer and General Counsel		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [■] The attached application, or
- [ ] United States application or PCT international application number _____

filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Tony M. Pearce Date (Optional): 11/17/2017

Signature: DocuSigned by: Tony Pearce D8A0FE65ECD44BC... /

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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- [■] The attached application, or
- [ ] United States application or PCT international application number _____

filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

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LEGAL NAME OF INVENTOR

Inventor: Tanner Rick Wheadon Date (Optional): 15 November 2017

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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- [ ] United States application or PCT international application number _____

filed on _____.

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I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

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LEGAL NAME OF INVENTOR

Inventor: Lars Christen Hamilton Date (Optional): 15 November 2017

Signature: Lars Hamilton

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2017-11-17
First Named Inventor	Tony M. Pearce
Art Unit	
Examiner Name	
Attorney Docket Number	3388.01-P13943US

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4369284		1983-01-18	Chen	
	2	5994450		1999-11-30	Pearce	
	3	7964664		2011-06-21	Pearce	
	4	8434748		2013-05-07	Pearce et al.	
	5	8628067		2014-01-14	Pearce et al.	
	6	8919750		2014-12-30	Pearce et al.	
	7	8932692		2015-01-13	Pearce	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2017-11-17
First Named Inventor	Tony M. Pearce
Art Unit	
Examiner Name	
Attorney Docket Number	3388.01-P13943US

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20170251825	A1	2017-09-07	Pearce	

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	1	U.S. Patent Application No. 15/662,934, to Moon et al., filed July 28, 2017.	

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2017-11-17
	First Named Inventor	Tony M. Pearce
	Art Unit	
	Examiner Name	
	Attorney Docket Number	3388.01-P13943US

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Kyle M. Woodhouse/	Date (YYYY-MM-DD)	2017-11-17
Name/Print	Kyle M. Woodhouse	Registration Number	70,087

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

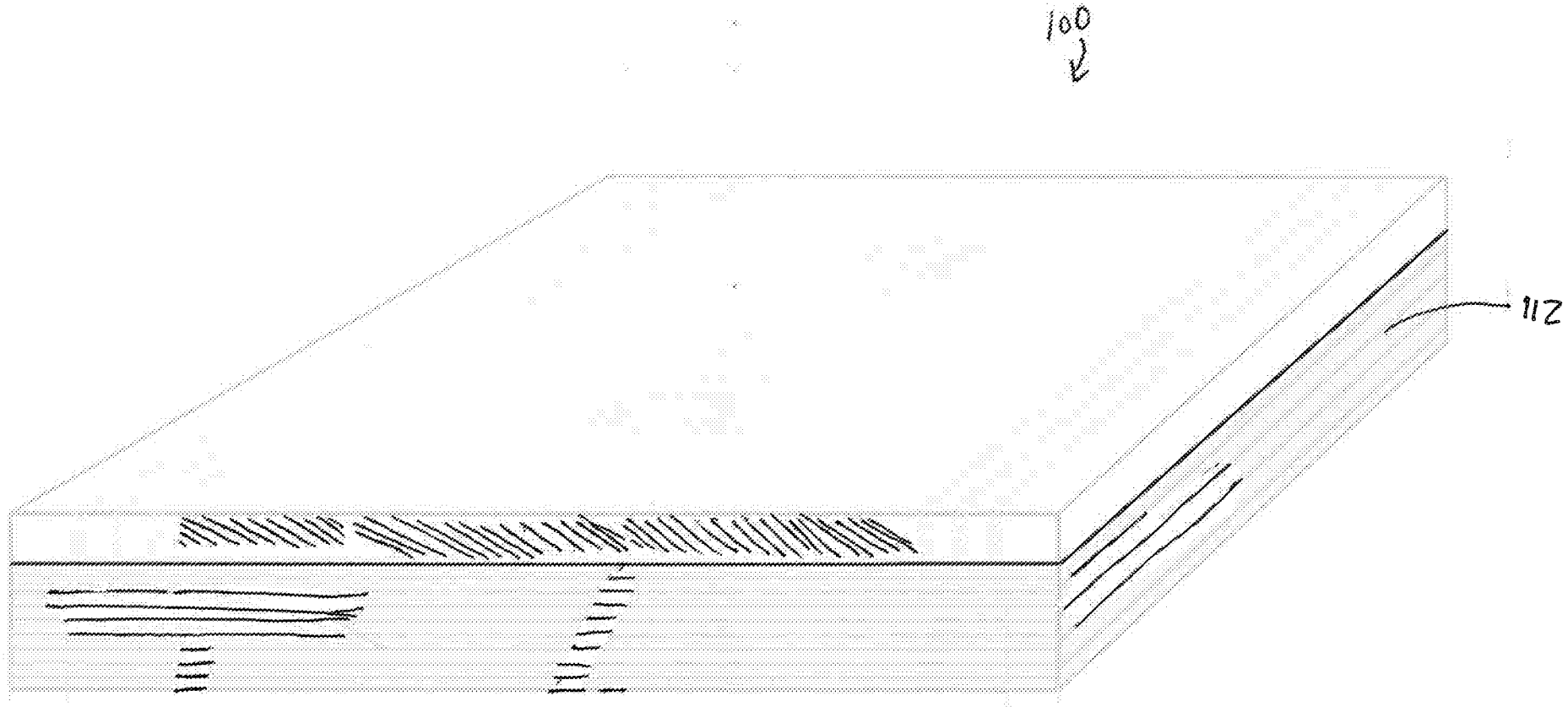


FIG. 1

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TEMPUR Page 667 of 717

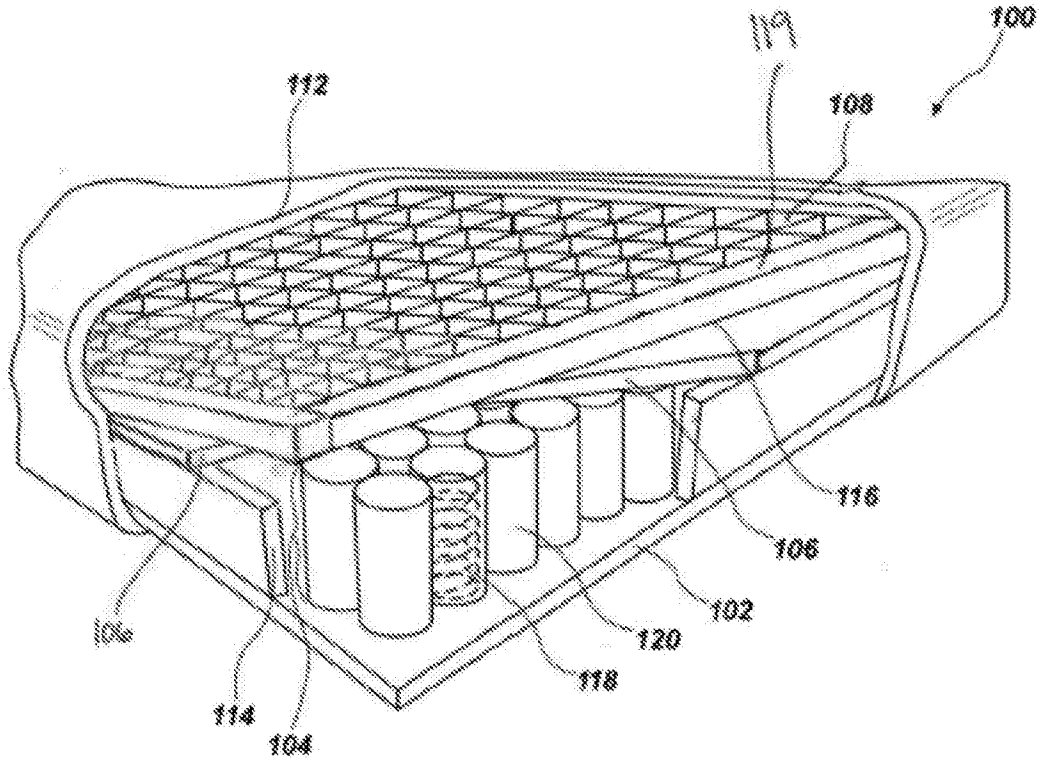


FIG. 2

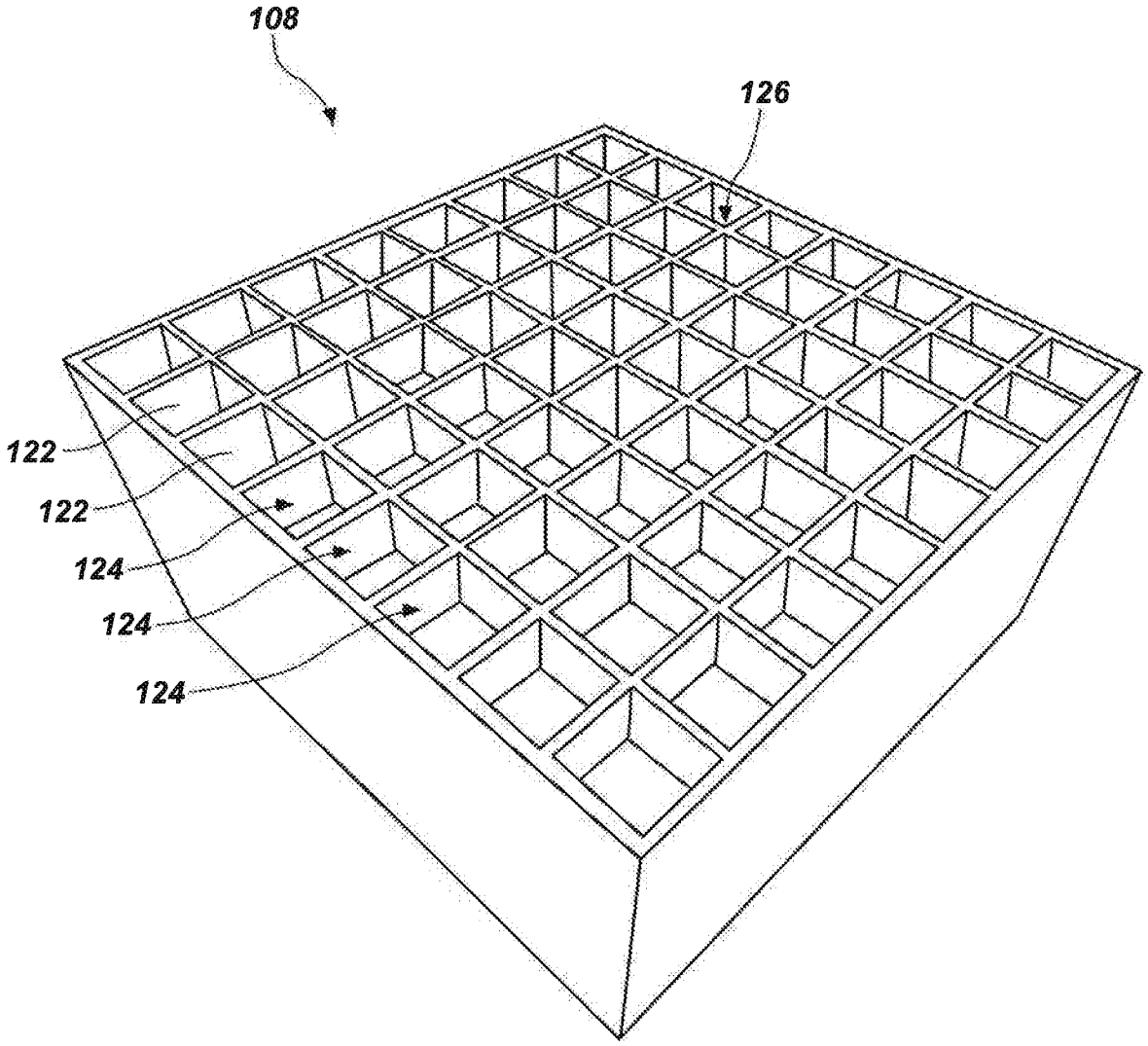


FIG. 3

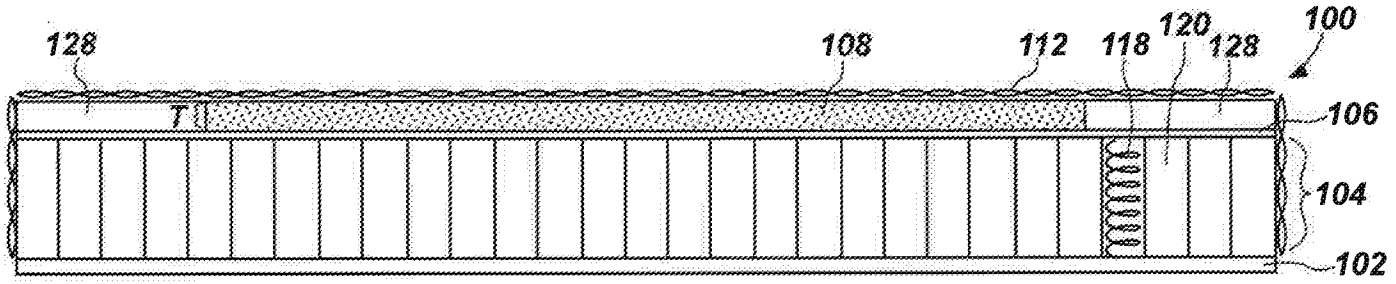


FIG. 4

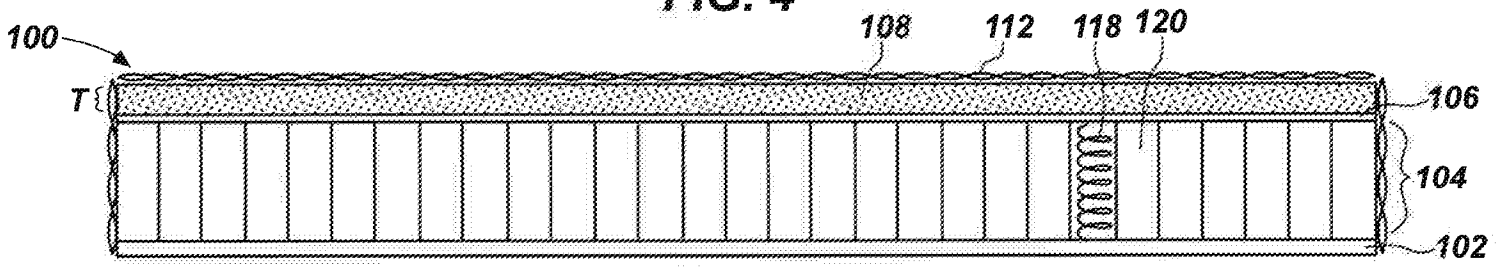


FIG. 5

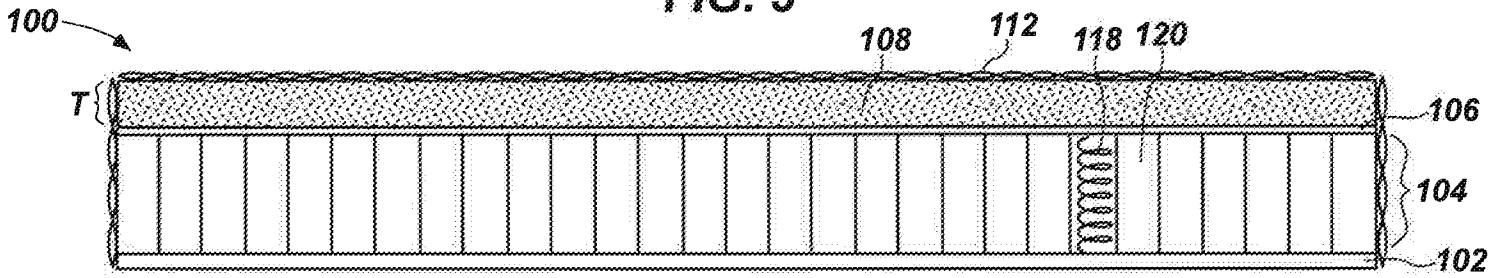


FIG. 6

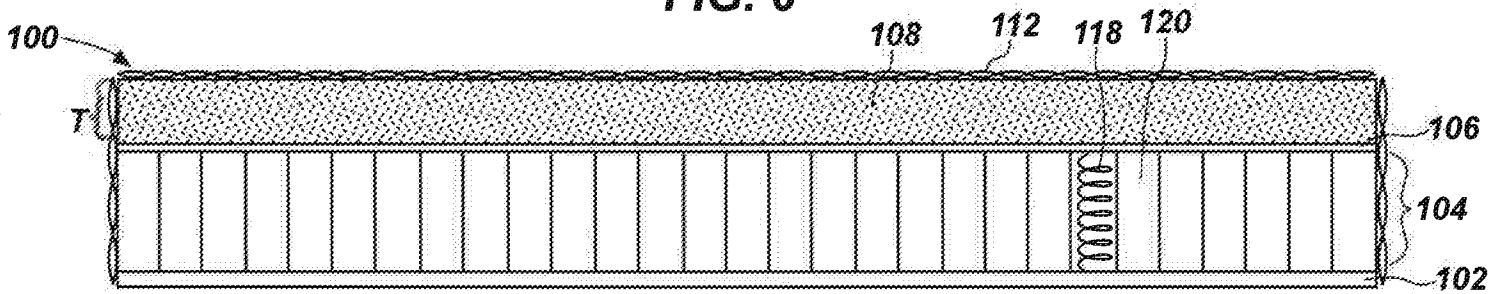


FIG. 7

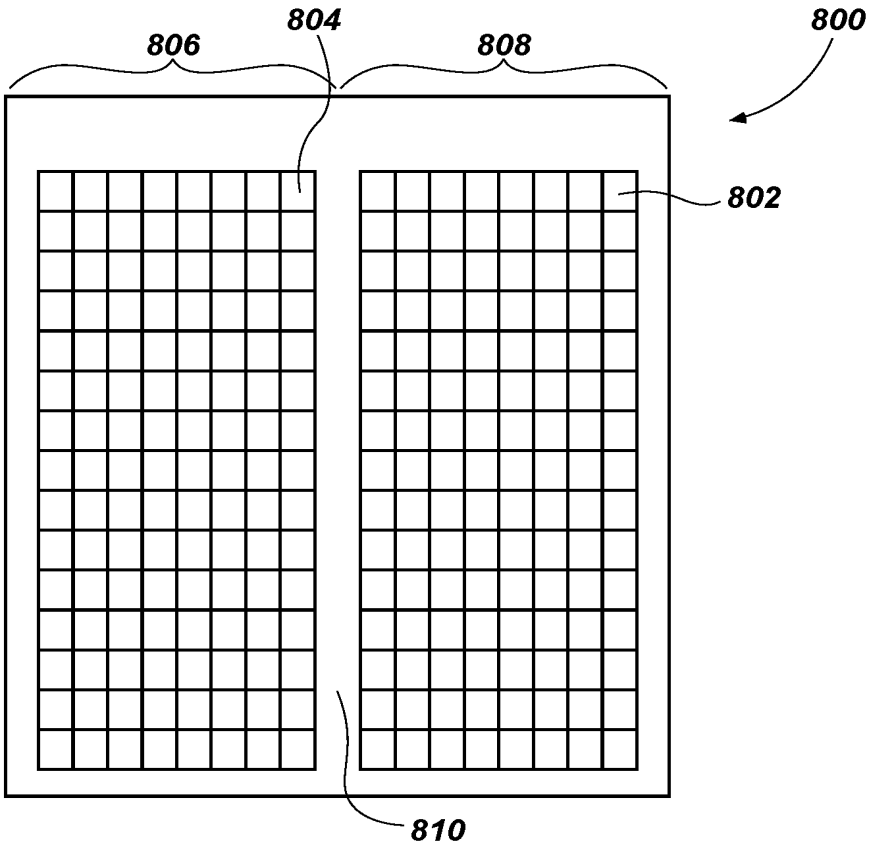


FIG. 8

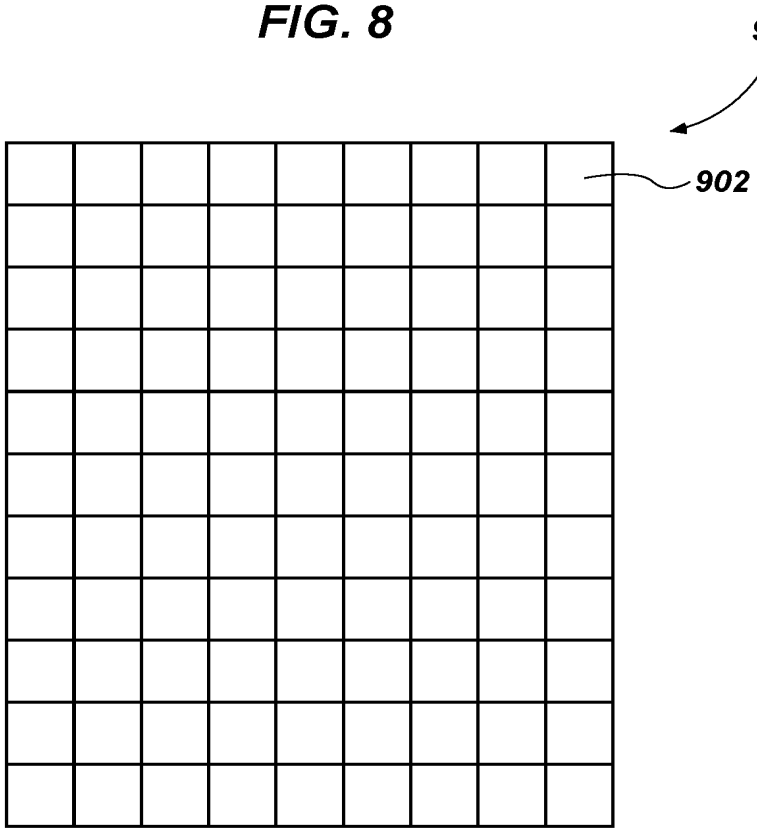


FIG. 9

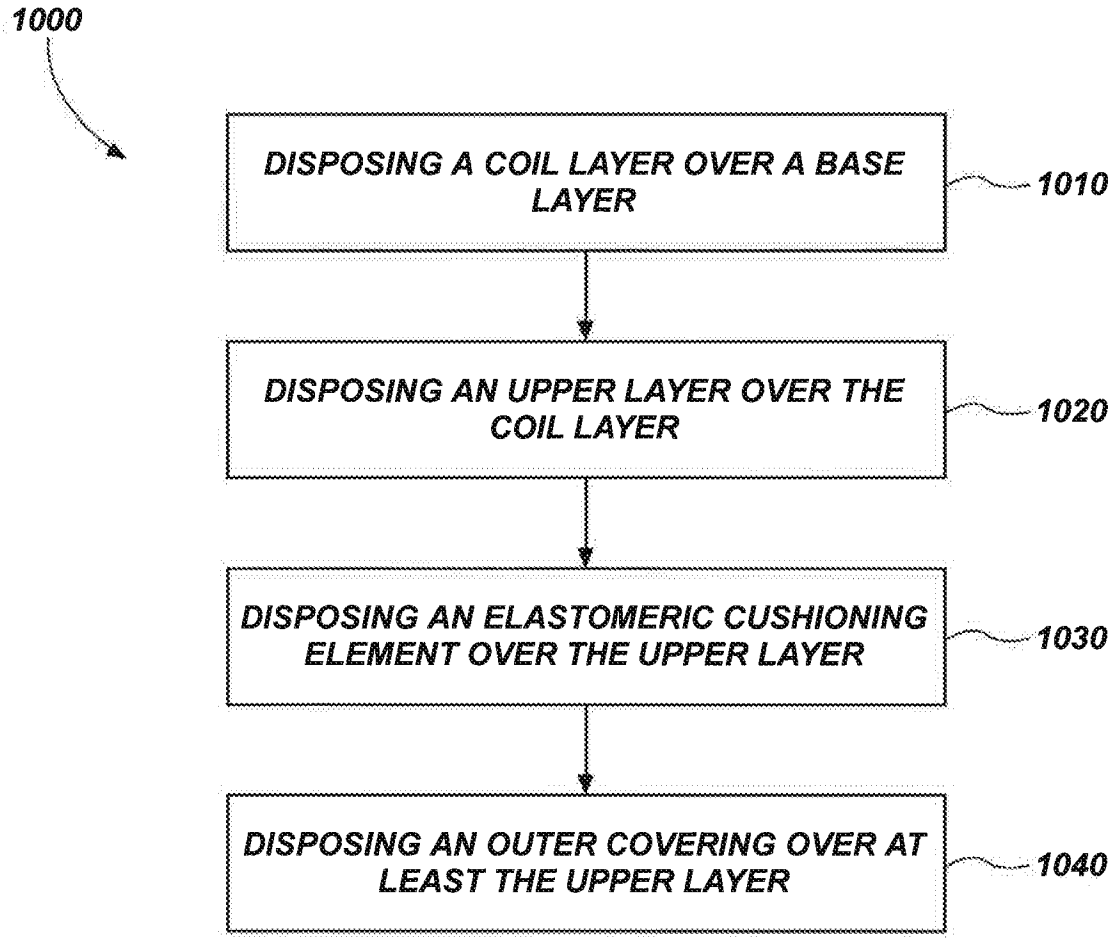

1000
DISPOSING A COIL LAYER OVER A BASE LAYER
1010
DISPOSING AN UPPER LAYER OVER THE COIL LAYER
1020
DISPOSING AN ELASTOMERIC CUSHIONING ELEMENT OVER THE UPPER LAYER
1030
DISPOSING AN OUTER COVERING OVER AT LEAST THE UPPER LAYER
1040

FIG. 10

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
First Named Inventor/Applicant Name:	Tony Pearce
Filer:	Kyle M. Woodhouse/Caitlin Johnson
Attorney Docket Number:	3388.01-P13943US

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	280	280
UTILITY SEARCH FEE	1111	1	600	600
UTILITY EXAMINATION FEE	1311	1	720	720
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1600**

PATENT
Attorney Docket 3388.01-P13943US

VIA ELECTRONIC FILING
November 17, 2017

APPLICATION FOR UNITED STATES LETTERS PATENT

for

MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

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TITLE

MATTRESSES INCLUDING SPACER FABRIC AND RELATED METHODS

FIELD

[0001] Embodiments of the disclosure relate generally to cushioning elements such as mattresses including a pocketed coil layer, and to methods of making such mattresses.

BACKGROUND

[0002] Cushioning materials have a variety of uses, such as for mattresses, seating surfaces, shoe inserts, packaging, medical devices, *etc.* Cushioning materials may be formulated and/or configured to reduce peak pressure on a cushioned body, which may increase comfort for humans or animals, and may protect objects from damage. Cushioning materials may be formed of materials that deflect or deform under load, such as polyethylene or polyurethane foams (*e.g.,* convoluted foam), vinyl, rubber, springs, natural or synthetic fibers, fluid-filled flexible containers, *etc.* Different cushioning materials may have different responses to a given pressure, and some materials may be well suited to different applications. Cushioning materials may be used in combination with one another to achieve selected properties. For example, mattresses may include pocketed coils in combination with layers of foam, elastomer gels, *etc.* in order to achieve desired results in the cushioning materials.

[0003] In mattresses, springs (*e.g.,* coil springs) may be preferable to foam for their durability and ability to withstand compression. Springs may also impart a feel that may be more desirable to users than that of foam. Despite these advantages, springs may not provide a positive aesthetic and/or tactile experience if they are seen or felt through side panels of the mattress, prompting manufacturers to conceal the feel of springs on the sides of mattresses. One solution includes a wire frame around the edge of the mattress to provide structure to a cover of the mattress. However, the metal of the wire frame may be felt through the cover of the mattress. In addition, such a wire frame may not be particularly suited to handle compression during use and to packing mattresses for shipping and/or storage, such as direct-to-consumer mattresses that are shipped in logs, boxes, *etc.*

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BRIEF SUMMARY

[0004] In some embodiments, a mattress assembly may include a base layer, a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils, an upper layer disposed over the coil layer, and an elastomeric cushioning element disposed over the upper layer, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

[0005] In other embodiments, a mattress assembly may include a base layer, a coil layer disposed over the base layer, an upper layer disposed over the coil layer, and at least one elastomeric cushioning element disposed over the upper layer. The coil layer may include a plurality of pocketed coils, and each pocketed coil of the plurality of pocketed coils may include a plurality of casings and a coil disposed within the plurality of casings. The at least one elastomeric cushioning element may have a thickness within a range of about 2.0 inches to about 4.5 inches.

[0006] In further embodiments, a method of forming a mattress assembly may include disposing a coil layer over a base layer, disposing an upper layer over the coil layer, disposing an elastomeric cushioning element over the upper layer, wherein a thickness of the elastomeric cushioning element comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly, and disposing an outer covering over at least the upper layer.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] While the specification concludes with claims particularly pointing out and distinctly claiming what are regarded as embodiments of the present disclosure, various features and advantages of embodiments of the disclosure may be more readily ascertained from the following description of example embodiments of the disclosure when read in conjunction with the accompanying drawings, in which:

[0008] FIG. 1 is a perspective view of a mattress assembly according to the present disclosure;

[0009] FIG. 2 is a simplified perspective view of the mattress assembly of FIG. 1;

[0010] FIG. 3 is a perspective view of an elastomeric cushioning element according to one or more embodiments of the present disclosure;

[0011] FIG. 4 is a side cross-sectional view of a mattress assembly according to one or more embodiments of the present disclosure;

[0012] FIG. 5 is a side cross-sectional view of a mattress assembly according to one or more embodiments of the present disclosure;

[0013] FIG. 6 is a side cross-sectional view of a mattress assembly according to one or more embodiments of the present disclosure;

[0014] FIG. 7 is a side cross-sectional view of a mattress assembly according to one or more embodiments of the present disclosure;

[0015] FIG. 8 is a top schematic view of a mattress assembly according to one or more embodiments of the present disclosure;

[0016] FIG. 9 is a top schematic view of a mattress assembly according to one or more embodiments of the present disclosure; and

[0017] FIG. 10 is a flow chart of a method of forming a mattress assembly according to one or more embodiments of the present disclosure.

DETAILED DESCRIPTION

[0018] The following description provides specific details, such as material types, manufacturing processes, uses, and structures in order to provide a thorough description of embodiments of the disclosure. However, a person of ordinary skill in the art will understand that the embodiments of the disclosure may be practiced without employing these specific details. Indeed, the embodiments of the disclosure may be practiced in conjunction with conventional manufacturing techniques and materials employed in the industry.

[0019] In the following detailed description, reference is made to the accompanying drawings, which form a part hereof, and in which is shown, by way of illustration, specific embodiments in which the disclosure may be practiced. These embodiments are described in sufficient detail to enable a person of ordinary skill in the art to practice the disclosure. However, other embodiments may be utilized, and structural, procedural, and other changes may be made without departing from the scope of the disclosure. The illustrations presented herein are not meant to be actual views of any particular system, device, structure, or process, but are idealized representations that are employed to describe the embodiments of the disclosure. The drawings presented herein are not necessarily drawn to scale. Similar structures or components in the various drawings may retain the same or similar numbering for the convenience of the reader; however, the

similarity in numbering does not mean that the structures or components are necessarily identical in size, composition, configuration, or other property.

[0020] As used herein, any relational term, such as "first," "second," "top," "bottom," "upper," "base," etc., is used for clarity and convenience in understanding the disclosure and accompanying drawings, and does not connote or depend on any specific preference or order, except where the context clearly indicates otherwise. For example, these terms may refer to an orientation of elements of a mattress when oriented for sleeping in a conventional manner. Furthermore, these terms may refer to an orientation of elements of mattress assembly as illustrated in the drawings.

[0021] As used herein, the term "substantially" in reference to a given parameter, property, or condition means and includes to a degree that one skilled in the art would understand that the given parameter, property, or condition is met with a small degree of variance, such as within acceptable manufacturing tolerances. For example, a parameter that is substantially met may be at least about 90% met, at least about 95% met, or even at least about 99% met.

[0022] As used herein, the term "elastomeric polymer" means and includes a polymer capable of recovering its original size and shape after deformation. In other words, an elastomeric polymer is a polymer having elastic or viscoelastic properties. Elastomeric polymers may also be referred to as "elastomers" in the art. Elastomeric polymers include, without limitation, homopolymers (polymers having a single chemical unit repeated) and copolymers (polymers having two or more chemical units).

[0023] As used herein, the term "elastomeric block copolymer" means and includes an elastomeric polymer having groups or blocks of homopolymers linked together, such as A–B diblock copolymers and A–B–A triblock copolymers. A–B diblock copolymers have two distinct blocks of homopolymers. A–B–A triblock copolymers have two blocks of a single homopolymer (A) each linked to a single block of a different homopolymer (B).

[0024] As used herein, the term "plasticizer" means and includes a substance added to another material (*e.g.*, an elastomeric polymer) to increase a workability of the material. For example, a plasticizer may increase the flexibility, softness, or extensibility of the material. Plasticizers include, without limitation, hydrocarbon fluids, such as mineral oils. Hydrocarbon plasticizers may be aromatic or aliphatic.

[0025] As used herein, the term "elastomeric material" means and includes elastomeric polymers and mixtures of elastomeric polymers with plasticizers and/or other materials. Elastomeric materials are elastic (*i.e.*, capable of recovering size and shape after deformation). Elastomeric materials include, without limitation, materials referred to in the art as "elastomer gels," "gelatinous elastomers," or simply "gels."

[0026] Embodiments of the present disclosure include a mattress assembly having an elastomeric cushioning element that comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly. For example, the elastomeric cushioning element may comprise about 30.8% of the overall thickness of the mattress assembly.

[0027] Additional embodiments of the present disclosure include a mattress assembly having a coil layer that includes a plurality of coils with each coil of the plurality of coils being disposed in multiple casings (e.g., bags). For example, each coil may be disposed within two or more polypropylene bags.

[0028] Further embodiments of the present disclosure include a mattress assembly having a latex water based adhesive disposed between one or more layers of the mattress assembly.

[0029] FIG. 1 shows a mattress assembly 100 according to one or more embodiments of the present disclosure. FIG. 2 shows a simplified top perspective view of the mattress assembly 100 of FIG. 1. In FIG. 2, various portions of the mattress assembly 100 are removed to provide a cutaway view and to better show internal components of the mattress assembly 100. Referring to FIGS. 1 and 2 together, in one or more embodiments, the mattress assembly 100 may include a base layer 102, a coil layer 104, an upper layer 106, an elastomeric cushioning element 108, an edge portion 119, one or more side panels 114, and the outer covering 112.

[0030] The base layer 102 may have generally planar top and bottom surfaces. The coil layer 104 may be disposed on the top surface of the base layer 102 and between the base layer 102 and the upper layer 106. In particular, the upper layer 106 may be disposed over and may at least substantially extend over the coil layer 104. The elastomeric cushioning element 108 may be disposed over an upper surface of the upper layer 106 and may extend over at least a portion of the upper layer 106. The edge portion 119 may extend around an outer peripheral edge of the elastomeric cushioning element 108. The one or more side panels 114 may extend along outer perimeters of the base layer 102 and the upper layer 106 and may be disposed between the upper layer 106 and the base layer 102. Furthermore, the one or more side panels 114 may extend within

plane perpendicular to a plane defined by the top surface of the base layer 102. The outer covering 112 may extend from the base layer 102 and may at least substantially encase the coil layer 104, upper layer 106, and elastomeric cushioning element 108.

[0031] In some embodiments, the mattress assembly 100 may include a stabilization material 116 between the elastomeric cushioning element 108 and the upper layer 106. In some instances, the stabilization material 116 may include a relatively thin material (*e.g.,* cotton spandex blend "scrim") and may be used to provide a surface for adhering (*e.g.,* gluing) the elastomeric cushioning element 108 to surrounding materials, such as another elastomeric cushioning element 108 and/or an upper surface of the upper layer 106. In some embodiments, the stabilization material 116 may comprise a scrim fabric (*e.g.,* a woven or non-woven fabric material) and portions of the elastomeric cushioning element 108 may seep through (*e.g.,* be melt-fused into, bleed through, push through, leak through, pass through, *etc.*) the scrim fabric of the stabilization material 116. For example, when the elastomeric cushioning element 108 includes a gel material (as described below), portions of the gel material may be heat fused through the stabilization material 116. The portions of the elastomeric cushioning element 108 that extend through the scrim fabric of the stabilization material 116 may create a non-slip surface or reduced slip surface on a lower surface of the stabilization material 116 (*e.g.,* surface that would contact an upper surface of the upper layer 106). The non-slip surface or reduced slip surface created by the elastomeric cushioning element 108 may help the cushioning materials stay in place relative to one another.

[0032] Furthermore, in some embodiments, an adhesive may be disposed between the stabilization material 116 and the upper surface of the upper layer 106. However, an adhesive may not be disposed between the edge portion 119 and the upper layer 106. Furthermore, an adhesive may be disposed between the base layer 102 and the coil layer 104. Moreover, an adhesive may be disposed between the coil layer 104 and the upper layer 106. Additionally, an adhesive may be disposed between the one or more side panels 114 and the coil layer 104. In some embodiments the adhesive(s) may include a latex water based adhesive. For instance, in one or more embodiments, the adhesive(s) may include one or more of SIMALFA® 338 and SIMALFA® 310.

[0033] In one or more embodiments, the mattress assembly 100 may not include a stabilization material 116 between the coil layer 104 and the upper layer 106 of the mattress assembly 100. However, in some instances, an adhesive may be disposed between the stabilization

material 116 and the upper surface of the upper layer 106. For example, the adhesive may include any of the adhesives described above.

[0034] In some embodiments, the outer covering 112 may comprise a stretchable material that may be secured to or be integral with the elastomeric cushioning element 108. Such a stretchable material is described in U.S. Patent Application No. 15/062,621, to Pearce, filed March 7, 2016, the entire disclosure of which is incorporated herein by this reference.

[0035] In one or more embodiments, the base layer 102 and the upper layer 106 may include a polyurethane foam. In additional embodiments, the base layer 102 and the upper layer 106 may include one or more of a memory polyurethane foam, a latex foamed rubber, or any other suitable foam. In some embodiments, the base layer 102 may include a polyurethane foam having a nominal density of about 2.0 lb/ft^3 and an indention load deflection (ILD) of 55 (i.e., 55 ILD). Additionally, the upper layer 106 may include a polyurethane foam having a nominal density of about 2.0 lb/ft^3 and 18 ILD. The one or more side panels 114 may also include a polyurethane foam or any other spacer fabric known in the art. For example, the one or more side panels 114 may include any of the side panels described in U.S. Patent Application No. 15/662,934, to Moon et al., filed July 28, 2017, the disclosure of which is incorporated in its entirety by this reference herein.

[0036] The coil layer 104 may include a plurality of coils 118 (*e.g.,* steel coils), and each coil 118 of the plurality of coils 118 may be encased in at least one respective casing 120 (*e.g.,* polypropylene socks or bags). For example, each casing 120 may form a pocket for a respective coil 118. In other words, the plurality of coils 118 may include a plurality of pocketed coils 118. In some embodiments, each coil 118 may include a relatively thin-gauge, barrel-shaped (e.g., helical-shaped), knotless coil. Furthermore, in one or more embodiments, each coil 118 may be encased in multiple casings 120. For instance, each coil 118 may be double bagged or triple bagged. In one or more embodiments, the casings 120 may include a polypropylene material.

[0037] The casings 120 may include a two-ply polypropylene non-woven material. In one or more embodiments, the polypropylene non-woven material may include one or more of BERRY® products 1430408, 1430379, and 1430538. In some embodiments, each ply of the casings 120 may have a thickness within a range of about 0.10 mm and about 0.40 mm. As a non-limiting example, each ply of the casings 120 may have a thickness within a range of about 0.15 mm and about 0.30 mm. However, any suitable material may be used. The casings 120 may provide sound dampening effects.

[0038] For example, when tested according to the test method of utilizing the application SOUND METER by Abc Apps from the Google Play Store on a Galaxy S6 Active phone to measure sound levels from the mattress assembly 100. During the test method, a 3x3 coil structure having each coil 118 covered by the above-described casings 120 was compressed multiple times for the duration of 15 seconds, and the 3x3 coil structure exhibited an average sound level within a range of about 35 decibels and about 45 decibels. For example, the 3x3 coil structure exhibited an average sound level of about 40 decibels. In comparison, conventional mattresses, when tested according to the above test method, exhibited an average sound level of about 50 decibels. Accordingly, by encasing each coil 118 with multiple casings 120 (e.g., a first casing 120 and a second casing 120), the mattress assembly 200 of the present disclosure may be advantageous over conventional mattress assemblies. For example, the mattress assembly 100 may be quieter than conventional mattresses (e.g., may exhibit about 20% less sound than conventional mattresses).

[0039] In some embodiments, each casing 120 of each coil 118 of the plurality of coils 118 may be individual and discrete. In additional embodiments, the casings 120 of the plurality of coils 118 may be connected (i.e., joined) and may form a single body. Furthermore, each coil 118 of the plurality of coils 118 may extend longitudinally in a direction at least substantially orthogonal (i.e., normal) to an upper surface of the base layer 102. Furthermore, the plurality of coils 118 may oriented next to each other in an array (e.g., row and columns or grid pattern) to form the coil layer 104.

[0040] FIG. 4 a simplified perspective view of the elastomeric cushioning element 108. The elastomeric cushioning element 108 may include a singly-molded elastomeric cushioning element 108. For example, the entirety of the elastomeric cushioning element 108 may be formed via a single molding process. In some embodiments, the elastomeric cushioning element 108 may include buckling walls 122. The buckling walls 122 of the elastomeric cushioning element 108 may be interconnected to one another and may define hollow columns 124 or voids in an expanded form. As used herein, the term "expanded form" means and includes a state in which a elastomeric cushioning element 108 has its original size and shape and wherein the buckling walls 122 are separated and define hollow columns 124.

[0041] The buckling walls 122 may extend in two directions, intersecting at right angles, and defining square voids 126. However, in some embodiments, the buckling walls 122 may intersect at other angles and define voids 126 of other shapes, such as triangles, parallelograms,

hexagons, *etc.* The elastomeric cushioning element 108 may comprise additional structures and configurations such as those structures and configurations described in, for example, U.S. Patent 8,434,748, titled "Cushions Comprising Gel Springs," issued May 7, 2013; U.S. Patent 8,628,067, titled "Cushions Comprising Core Structures and Related Methods," issued January 14, 2014; U.S. Patent 8,919,750, titled "Cushioning Elements Comprising Buckling Walls and Methods of Forming Such Cushioning Elements," issued December 30, 2014; and U.S. Patent 8,932,692, titled "Cushions Comprising Deformable Members and Related Methods," issued January 13, 2015, the entire disclosure of each of which is incorporated herein by this reference.

[0042] The buckling walls 122 may be formed of an elastomeric material. Elastomeric materials are described in, for example, U.S. Patent 5,994,450, titled "Gelatinous Elastomer and Methods of Making and Using the Same and Articles Made Therefrom," issued November 30, 1999 (hereinafter "the '450 Patent"); U.S. Patent 7,964,664, titled "Gel with Wide Distribution of MW in Mid-Block" issued June 21, 2011; U.S. Patent 4,369,284, titled "Thermoplastic Elastomer Gelatinous Compositions" issued January 18, 1983; U.S. Patent 8,919,750, titled "Cushioning Elements Comprising Buckling Walls and Methods of Forming Such Cushioning Elements," issued December 30, 2014 (hereinafter "the '750 Patent"); the disclosures of each of which are incorporated herein in their entirety by this reference. The elastomeric material may include an elastomeric polymer and a plasticizer. The elastomeric material may be a gelatinous elastomer (also referred to in the art as gel, elastomer gel, or elastomeric gel), a thermoplastic elastomer, a natural rubber, a synthetic elastomer, a blend of natural and synthetic elastomers, *etc.*

[0043] The elastomeric polymer may be an A–B–A triblock copolymer such as styrene ethylene propylene styrene (SEPS), styrene ethylene butylene styrene (SEBS), and styrene ethylene ethylene propylene styrene (SEEPS). For example, A–B–A triblock copolymers are currently commercially available from Kuraray America, Inc., of Houston, TX, under the trade name SEPTON® 4055, and from Kraton Polymers, LLC, of Houston, TX, under the trade names KRATON® E1830, KRATON® G1650, and KRATON® G1651. In these examples, the "A" blocks are styrene. The "B" block may be rubber (*e.g.*, butadiene, isoprene, *etc.*) or hydrogenated rubber (*e.g.*, ethylene/propylene or ethylene/butylene or ethylene/ethylene/propylene) capable of being plasticized with mineral oil or other hydrocarbon fluids. The elastomeric material may include elastomeric polymers other than styrene-based copolymers, such as non-styrenic elastomeric

polymers that are thermoplastic in nature or that can be solvated by plasticizers or that are multi-component thermoset elastomers.

[0044] The elastomeric material may include one or more plasticizers, such as hydrocarbon fluids. For example, elastomeric materials may include aromatic-free food-grade white paraffinic mineral oils, such as those sold by Sonneborn, Inc., of Mahwah, NJ, under the trade names BLANDOL® and CARNATION®.

[0045] In some embodiments, the elastomeric material may have a plasticizer-to-polymer ratio from about 0.1:1 to about 50:1 by weight. For example, elastomeric materials may have plasticizer-to-polymer ratios from about 1:1 to about 30:1 by weight, or even from about 1.5:1 to about 10:1 by weight. In further embodiments, elastomeric materials may have plasticizer-to-polymer ratios of about 4:1 by weight.

[0046] The elastomeric material may have one or more fillers (*e.g.*, lightweight microspheres). Fillers may affect thermal properties, density, processing, *etc.*, of the elastomeric material. For example, hollow microspheres (*e.g.*, hollow glass microspheres or hollow acrylic microspheres) may decrease the thermal conductivity of the elastomeric material by acting as an insulator because such hollow microspheres (*e.g.*, hollow glass microspheres or hollow acrylic microspheres) may have lower thermal conductivity than the plasticizer or the polymer. As another example, metal particles (*e.g.*, aluminum, copper, *etc.*) may increase the thermal conductivity of the resulting elastomeric material because such particles may have greater thermal conductivity than the plasticizer or polymer. Microspheres filled with wax or another phase-change material (*i.e.*, a material formulated to undergo a phase change near a temperature at which a cushioning element may be used) may provide temperature stability at or near the phase-change temperature of the wax or other phase-change material within the microspheres (*i.e.*, due to the heat of fusion of the phase change). The phase-change material may have a melting point from about 20°C to about 45°C.

[0047] The elastomeric material may also include antioxidants. Antioxidants may reduce the effects of thermal degradation during processing or may improve long-term stability. Antioxidants include, for example, pentaerythritol tetrakis(3-(3,5-di-tert-butyl-4-hydroxyphenyl) propionate), commercially available as IRGANOX® 1010, from BASF Corp., of Iselin, NJ or as EVERNOX®-10, from Everspring Corp. USA, of Los Angeles, CA; octadecyl-3-(3,5-di-tert-butyl-4 -hydroxyphenyl)propionate, commercially available as IRGANOX® 1076, from BASF Corp. or as EVERNOX® 76, from Everspring Chemical; and

tris(2,4-di-tert-butylphenyl)phosphite, commercially available as IRGAFOS® 168, from BASF Corp. or as EVERFOS® 168, from Everspring Chemical. One or more antioxidants may be combined in a single formulation of elastomeric material. The use of antioxidants in mixtures of plasticizers and polymers is described in columns 25 and 26 of the '450 Patent. The elastomeric material may include up to about 5 wt% antioxidants. For instance, the elastomeric material may include from about 0.10 wt% to about 1.0 wt% antioxidants.

[0048] In some embodiments, the elastomeric material may include a resin. The resin may be selected to modify the elastomeric material to slow a rebound of the elastomeric cushioning element 108 after deformation. The resin, if present, may include a hydrogenated pure monomer hydrocarbon resin, such as those commercially available from Eastman Chemical Company, of Kingsport, TN, under the trade name REGALREZ®. The resin, if present, may function as a tackifier, increasing the stickiness of a surface of the elastomeric material.

[0049] In some embodiments, the elastomeric material may include a pigment or a combination of pigments. Pigments may be aesthetic and/or functional. That is, pigments may provide the elastomeric cushioning element 108 with an appearance appealing to consumers. In addition, an elastomeric cushioning element 108 having a dark color may absorb radiation differently than an elastomeric cushioning element 108 having a light color.

[0050] The elastomeric material may include any type of gelatinous elastomer. For example, the elastomeric material may include a melt-blend of one part by weight of a styrene-ethylene-ethylene-propylene-styrene (SEEPS) elastomeric triblock copolymer (*e.g.*, SEPTON® 4055) with four parts by weight of a 70-weight straight-cut white paraffinic mineral oil (*e.g.*, CARNATION® white mineral oil) and, optionally, pigments, antioxidants, and/or other additives.

[0051] The elastomeric material may include a material that may return to its original shape after deformation, and that may be elastically stretched. The elastomeric material may be rubbery in feel, but may deform to the shape of an object applying a deforming pressure better than conventional rubber materials, and may have a durometer hardness lower than conventional rubber materials. For example, the elastomeric material may have a hardness on the Shore A scale of less than about 50, from about 0.1 to about 50, or less than about 5.

[0052] Referring again to FIG. 2 again, a configuration of having the coil layer 104 with the upper layer 106 on top of the coil layer 104 and the elastomeric cushioning element 108 on top

of the upper layer 106 may provide advantages over conventional mattress assemblies. For example, in comparison to conventional mattress assemblies, the plurality of coils 118 of the coil layer 104 may better conform to an upper surface of the mattress assembly 100. For instance, when subjected to a weight (e.g., a person on the mattress assembly 100) and a resulting deformation, the plurality of coils 118 of the coil layer 104 may better conform to the deformation. Furthermore, the configuration may provide an increase in lateral stability in comparison to conventional mattress assemblies. Additionally, the foregoing configuration may make methods of manufacturing the mattress assembly 100 easier in comparison to conventional methods of manufacturing mattresses because it removes a need to laminate/glue the coil layer 104 to the elastomeric cushioning element 108. Having the upper layer 106 between the coil layer 104 and the elastomeric cushioning element 108 provides a porous surface to adhere to both of the coil layer 104 and the elastomeric cushioning element 108. Furthermore, the upper layer 106 dampens sound from the coil layer 104.

[0053] FIGS. 4-7 show schematic side cross-sectional views of mattress assemblies according to embodiments of the present disclosure. As shown in FIG. 4, in some embodiments, the elastomeric cushioning element 108 may not cover an entirety of an upper surface of the upper layer 106 of the mattress assembly 100. In such embodiments, the mattress assembly 100 may further include one or more segments 128 of foam (e.g., a polyurethane foam) in place of the elastomeric cushioning element 108 to provide an at least substantially planar upper surface of the mattress assembly 100. For instance, the one or more segments 128 of foam may be disposed adjacent to the elastomeric cushioning element 108 on the upper layer 106 of the mattress assembly 100.

[0054] In some embodiments, the elastomeric cushioning element 108 may be disposed only over a center portion of the upper layer 106 of the mattress assembly 100. For example, the elastomeric cushioning element 108 may not cover a portion of the upper layer 106 extending around a perimeter of the upper layer 106 of the mattress assembly 100. In such embodiments, the segments of foam 128 may be disposed over the portion of the upper layer 106 extending around a perimeter of the upper layer 106. The foregoing configuration may be utilized with mattress sizes where only one sleeper is expected (i.e., twin and full sized mattress).

[0055] In additional embodiments, the elastomeric cushioning element 108 may be disposed only in areas anticipated as predominant sleeping areas of sleepers. For example, the elastomeric cushioning element 108 may include two separate sections centered on opposing longitudinal halves of the mattress assembly 100. The foregoing configuration may be utilized with

mattress sizes where two sleepers are expected (i.e., king, queen, and full sized mattresses). Furthermore, the foregoing embodiment is described in further detail with reference to FIG. 8.

[0056] As show in FIGS. 5-7, a thickness of the elastomeric cushioning element 108 may vary. In some embodiments, the elastomeric cushioning element 108 may have a thickness T of within a range of about 1.5 inches to about 2.5 inches. Furthermore, in some instances, the thickness T of the elastomeric cushioning element 108 may comprise between about 15.0% and about 20.0% of an overall thickness of the mattress assembly 100. For instance, the elastomeric cushioning element 108 may have a thickness T of about 2.0 inches and a thickness T that comprises about 18.2% of the overall thickness of the mattress assembly 100. In additional embodiments, the elastomeric cushioning element 108 may have a thickness T of within a range of about 2.5 inches to about 3.5 inches. Moreover, in some embodiments, the thickness T of the elastomeric cushioning element 108 may comprise between about 20.0% and about 30.0% of an overall thickness of the mattress assembly 100. For example, the elastomeric cushioning element 108 may have a thickness T of about 3.0 inches and a thickness T that comprises about 25.0% of the overall thickness of the mattress assembly 100. In further embodiments, the elastomeric cushioning element 108 may have a thickness T of within a range of about 3.5 inches to about 4.5 inches. Additionally, in one or more embodiments, the thickness T of the elastomeric cushioning element 108 may comprise between about 30.0% and about 35.0% of an overall thickness of the mattress assembly 100. As a non-limiting example, the elastomeric cushioning element 108 may have a thickness T of about 4.0 inches and a thickness T that comprises about 30.8% of the overall thickness of the mattress assembly 100.

[0057] Referring still to FIGS. 5-7, in some embodiments, the upper layer 106 of the mattress assembly 100 may have a thickness within a range of about 0.25 inches and about 0.75 inches. For instance, the upper layer 106 of the mattress assembly 100 may have a thickness of about 0.50 inches. Additionally, the coil layer 104 of the mattress assembly 100 may have a thickness (e.g., height) within range of about 6.0 inches and about 9.0 inches. For example, the coil layer 104 of the mattress assembly 100 may have a thickness of about 7.5 inches. Moreover, the base layer 102 of the mattress assembly 100 may a thickness within a range of about 0.50 inches and about 1.50 inches. As a non-limiting example, the base layer 102 may have a thickness of about 1.00 inch.

[0058] FIGS. 8 and 9 show top views of mattress assemblies according to embodiments of the present disclosure. As shown in FIG. 8, in some embodiments, the mattress assembly 800 may include one or more elastomeric cushioning element sections 802, 804 (e.g., a plurality of distinct elastomeric cushioning elements). Furthermore, the one or more elastomeric cushioning element sections 802, 804 may be disposed (e.g., located) in anticipated sleeping areas of one or more sleepers. For example, for a mattress size where two sleepers are anticipated (e.g., a queen and/or king size bed), the mattress assembly 800 may include a first elastomeric cushioning element section 802 and a second elastomeric cushioning element section 804. The first elastomeric cushioning element section 802 may be centered longitudinally within a first half 806 of the overall mattress assembly (divided longitudinally), and the second elastomeric cushioning element section 804 may be centered longitudinally within a second half 808 of the overall mattress assembly. In some embodiments, each of the first elastomeric cushioning element section 802 and the second elastomeric cushioning element section 804 may have a width within a range of about 22.0 inches to about 28.0 inches. For instance, each of the first and second elastomeric cushioning element sections 802, 804 may have a width of about 25.0 inches. Furthermore, each of the first and second elastomeric cushioning element sections 802, 804 may have a length (e.g., longitudinal length) within a range of about 50.0 inches to about 65 inches. For example, the first and second elastomeric cushioning element sections 802, 804 may have a length of about 56.0 inches. Furthermore, a polyurethane foam 810 may be disposed where coverage is not provided by the first and second elastomeric cushioning element sections 802, 804. In some instances, the polyurethane foam 810 may include a polyurethane foam having a nominal density of about 2.0 lb/ft^3 and 18 ILD.

[0059] As shown in FIG. 9, in some embodiments, the elastomeric cushioning element 902 may provide complete coverage over a mattress assembly 900. For example, the elastomeric cushioning element 902 may cover at least substantially an entire upper surface of the upper layer 106 (FIG. 2) of the mattress assembly 900.

[0060] FIG. 10 shows a schematic flow chart of a method 1010 of forming a mattress assembly 100. In some embodiments, the method 1010 may include an act 1010 of disposing a coil layer 104 over a base layer 102. For example, act 1010 may include disposing a plurality of coils 118 within a plurality of casings 120, wherein each coil 118 of the plurality of coils 118 is disposed within at least two respective casings 120, and disposing the plurality of coils 118 over the coil layer 104. Additionally, act 1010 can include disposing the plurality of coils 118 within polypropylene

bags. Furthermore, act 1010 may include orienting the plurality of coils 118 within an array (e.g., rows and columns) over the base layer 102. Moreover, act 1010 may include disposing the coil layer 104 over the base layer 102 according to any of the configurations described above in regard to FIGS. 1, 2, and 4-7.

[0061] Additionally, the method 1000 may include an act 1020 of disposing an upper layer 106 over the coil layer 104. In some embodiments, act 1020 may not include disposing a stabilization material between the coil layer 104 and the upper layer 106. However, in some embodiments, act 1020 may include disposing an adhesive between the coil layer 104 and the upper layer 106. For example, act 1020 may include disposing any of the adhesives described above between the coil layer 104 and the upper layer 106. Furthermore, act 1020 may include disposing an upper layer 106 over the coil layer 104 according to any of the configurations described above in regard to FIGS. 1, 2, and 4-7.

[0062] Moreover, the method 1000 may include an act 1030 of disposing an elastomeric cushioning element 108 over the upper layer 106. For example, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 that comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly 100. For instance, a thickness of the elastomeric cushioning element 108 comprises between about 20.0% and about 32.0% of an overall thickness of the mattress assembly 100. In additional embodiments, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 that comprises between about 25.0% and about 32.0% of an overall thickness of the mattress assembly 100. In further embodiments, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 that comprises between about 30.0% and about 32.0% of an overall thickness of the mattress assembly 100. For instance, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 that comprises about 30.8% of an overall thickness of the mattress assembly 100.

[0063] In some embodiments, act 1030 can include disposing a plurality of elastomeric cushioning element 108 segments over the upper layer 106. Moreover, act 1030 can include disposing an elastomeric cushioning element 108 over the upper layer 106 according to any of the configurations described above and including any of the materials described in regard to FIGS. 1-9.

[0064] Additionally, the method 1000 may include act 1040 of disposing an outer covering 112 over at least the upper layer 106. For example, act 1040 can include disposing an outer

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covering 112 over the mattress assembly 100 such that the outer covering 112 covers at least substantially an entirety of the upper layer 106 and side panels 114 of the mattress assembly 100. In one or more embodiments, the method 600 can include disposing an adhesive between any of the layers of the mattress assembly 100.

[0065] Additional non-limiting example embodiments of the disclosure are described below.

[0066] Embodiment 1: A mattress assembly, comprising: a base layer; a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils 118; an upper layer disposed over the coil layer; and an elastomeric cushioning element disposed over the upper layer, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

[0067] Embodiment 2: The mattress assembly of Embodiment 1, wherein the coil layer has a thickness within a range of about 6.00 inches and about 8.00 inches.

[0068] Embodiment 3: The mattress assembly of Embodiment 2, wherein the coil layer has a thickness of about 7.50 inches.

[0069] Embodiment 4: The mattress assembly of Embodiment 1, further comprising: one or more side panels extending around outer perimeters of the base layer and the upper layer; and an outer covering disposed over the upper layer at least partially around the one or more side panels.

[0070] Embodiment 5: The mattress assembly of Embodiment 1, wherein the base layer and the upper layer both comprise a polyurethane foam.

[0071] Embodiment 6: The mattress assembly of Embodiment 1, wherein the elastomeric cushioning element has a thickness of about 4.0 inches.

[0072] Embodiment 7: The mattress assembly of Embodiment 1, further comprising an adhesive disposed between the elastomeric cushioning element and the upper layer.

[0073] Embodiment 8: The mattress assembly of Embodiment 7, wherein the adhesive comprises a latex water based adhesive.

[0074] Embodiment 9: The mattress assembly of Embodiment 1, wherein the base layer has a thickness within a range of about 0.75 inches and about 1.50 inches, and wherein the upper layer has a thickness within a range of about 0.25 inches and about 0.75 inches.

[0075] Embodiment 10: A mattress assembly, comprising: a base layer; a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils, each pocketed

coil of the plurality of pocketed coils comprises: a plurality of casings; and a coil disposed within the plurality of casings; an upper layer disposed over the coil layer; and at least one elastomeric cushioning element disposed over the upper layer, wherein the at least one elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

[0076] Embodiment 11: The mattress assembly of Embodiment 10, wherein the plurality of pocketed coils are oriented next to each other in a grid pattern.

[0077] Embodiment 12: The mattress assembly of Embodiment 10, wherein the plurality of casings of each pocketed coil comprises: a first casing 120; and a second casing 120 disposed within the first casing 120, wherein the coil is disposed within the second casing 120.

[0078] Embodiment 13: The mattress assembly of Embodiment 10, wherein the at least one elastomeric cushioning element comprises a plurality of distinct elastomeric cushioning elements disposed at different locations over the upper layer.

[0079] Embodiment 14: The mattress assembly of Embodiment 10, wherein the at least one elastomeric cushioning element does not cover an entirety of an upper surface of the upper layer.

[0080] Embodiment 15: The mattress assembly of Embodiment 11, wherein the at least one elastomeric cushioning element comprises interconnected buckling walls.

[0081] Embodiment 16: A method of forming a mattress assembly, comprising: disposing a coil layer over a base layer; disposing an upper layer over the coil layer; disposing an elastomeric cushioning element over the upper layer, wherein a thickness of the elastomeric cushioning element comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly; and disposing an outer covering over at least the upper layer.

[0082] Embodiment 17: The method of Embodiment 16, wherein disposing a coil layer over a base core layer comprise: disposing a plurality of coils within a plurality of casings, wherein each coil of the plurality of coils is disposed within at least two respective casings; and disposing the plurality of coils over the coil layer.

[0083] Embodiment 18: The method of Embodiment 17, wherein disposing a plurality of coils within a plurality of casings comprises disposing the plurality of coils within polypropylene bags.

[0084] Embodiment 19: The method of Embodiment 16, wherein the elastomeric cushioning element comprises about 30.8% of the overall thickness of the mattress assembly.

[0085] Embodiment 20: The method of Embodiment 16, further comprising disposing an adhesive between the elastomeric cushioning element and the upper layer.

[0086] While the present disclosure has been described herein with respect to certain illustrated embodiments, those of ordinary skill in the art will recognize and appreciate that it is not so limited. Rather, many additions, deletions, and modifications to the illustrated embodiments may be made without departing from the scope of the disclosure as hereinafter claimed, including legal equivalents thereof. In addition, features from one embodiment may be combined with features of another embodiment while still being encompassed within the scope of the disclosure as contemplated. Further, embodiments of the disclosure have utility with different and various mattress types and configurations.

CLAIMS

What is claimed is:

1. A mattress assembly, comprising:

a base layer;

a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils;

an upper layer disposed over the coil layer; and

an elastomeric cushioning element disposed over the upper layer, wherein the elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

2. The mattress assembly of claim 1, wherein the coil layer has a thickness within a range of about 6.00 inches and about 8.00 inches.

3. The mattress assembly of claim 2, wherein the coil layer has a thickness of about 7.50 inches.

4. The mattress assembly of claim 1, further comprising:

one or more side panels extending around outer perimeters of the base layer and the upper layer; and

an outer covering disposed over the upper layer at least partially around the one or more side panels.

.

5. The mattress assembly of claim 1, wherein the base layer and the upper layer both comprise a polyurethane foam.

6. The mattress assembly of claim 1, wherein the elastomeric cushioning element has a thickness of about 4.0 inches.

7. The mattress assembly of claim 1, further comprising an adhesive disposed between the elastomeric cushioning element and the upper layer.

8. The mattress assembly of claim 7, wherein the adhesive comprises a latex water based adhesive.

9. The mattress assembly of claim 1, wherein the base layer has a thickness within a range of about 0.75 inches and about 1.50 inches, and wherein the upper layer has a thickness within a range of about 0.25 inches and about 0.75 inches.

10. A mattress assembly, comprising:

a base layer;

a coil layer disposed over the base layer, the coil layer comprising a plurality of pocketed coils, each pocketed coil of the plurality of pocketed coils comprises:

a plurality of casings; and

a coil disposed within the plurality of casings;

an upper layer disposed over the coil layer; and

at least one elastomeric cushioning element disposed over the upper layer, wherein the at least one elastomeric cushioning element has a thickness within a range of about 2.0 inches to about 4.5 inches.

11. The mattress assembly of claim 10, wherein the plurality of pocketed coils are oriented next to each other in a grid pattern.

12. The mattress assembly of claim 10, wherein the plurality of casings of each pocketed coil comprises:

a first casing; and

a second casing disposed within the first casing, wherein the coil is disposed within the second casing.

13. The mattress assembly of claim 10, wherein the at least one elastomeric cushioning element comprises a plurality of distinct elastomeric cushioning elements disposed at different locations over the upper layer.

14. The mattress assembly of claim 10, wherein the at least one elastomeric cushioning element does not cover an entirety of an upper surface of the upper layer.

15. The mattress assembly of claim 11, wherein the at least one elastomeric cushioning element comprises interconnected buckling walls.

16. A method of forming a mattress assembly, comprising:

disposing a coil layer over a base layer;

disposing an upper layer over the coil layer;

disposing an elastomeric cushioning element over the upper layer, wherein a thickness of the elastomeric cushioning element comprises between about 15.0% and about 32.0% of an overall thickness of the mattress assembly; and

disposing an outer covering over at least the upper layer.

17. The method of claim 16, wherein disposing a coil layer over a base core layer comprise:

disposing a plurality of coils within a plurality of casings, wherein each coil of the plurality of coils is disposed within at least two respective casings; and

disposing the plurality of coils over the coil layer.

18. The method of claim 17, wherein disposing a plurality of coils within a plurality of casings comprises disposing the plurality of coils within polypropylene bags.

19. The method of claim 16, wherein the elastomeric cushioning element comprises about 30.8% of the overall thickness of the mattress assembly.

20. The method of claim 16, further comprising disposing an adhesive between the elastomeric cushioning element and the upper layer.

ABSTRACT OF THE DISCLOSURE

A mattress assembly includes a base layer, a coil layer disposed over the base layer, an upper layer disposed over the coil layer, and an elastomeric cushioning element disposed over the upper layer. The coil layer may include a plurality of pocketed coils. Furthermore, the elastomeric cushioning element may have a thickness within a range of about 2.0 inches to about 4.5 inches. Furthermore, the elastomeric cushioning element may form between about 15.0% and about 32.0% of an overall thickness of the mattress assembly. A method of forming a mattress assembly includes disposing a coil layer over a base layer, disposing an upper layer over the coil layer, disposing an elastomeric cushioning element over the upper layer, and disposing an outer covering over at least the upper layer.

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Electronic Acknowledgement Receipt

EFS ID:	30990354
Application Number:	15816983
International Application Number:	
Confirmation Number:	9411
Title of Invention:	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS
First Named Inventor/Applicant Name:	Tony Pearce
Customer Number:	24247
Filer:	Kyle M. Woodhouse/Caitlin Johnson
Filer Authorized By:	Kyle M. Woodhouse
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Receipt Date:	17-NOV-2017
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Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	$1600
RAM confirmation Number	112017INTEFSW00005905201469
Deposit Account	201469
Authorized User	Caitlin Johnson

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	Nov-17-2017-ADS-13943US.pdf	1794123 9c5e20399035823d9601869ceb86279daac80b1f	no	9
Warnings:					
Information:					
2	Assignee showing of ownership per 37 CFR 3.73	Nov-17-2017-373c-Statement-13943US.pdf	932157 a9854c7f474dea40d40f273ea1e2feba4fdad4bf	no	6
Warnings:					
Information:					
3	Power of Attorney	Nov-17-2017-POA-13943US.PDF	173532 fa7245863fab13559db9868351a136b09a49cedf	no	2
Warnings:					
Information:					
4	Oath or Declaration filed	Nov-17-2017-Declarations-13943US.pdf	896219 f8f10b0fa48ae1443ce81193d51322d1cda182ec	no	3
Warnings:					
Information:					
5	Information Disclosure Statement (IDS) Form (SB08)	Nov-17-2017-IDS-13943US.pdf	1083094 c0aff397845264c39d4e0a701cd79d182f837bae	no	4
Warnings:					
Information:					
6	Other Reference-Patent/App/Search documents	13873USApplication.pdf	612257 542da5599238cceaef420598a63e1ce27dcd4a6a	no	26
Warnings:					
Information:					

7	Drawings-only black and white line drawings	Nov-17-2017-Drawings-13943US.pdf	387564 e524b2bfca67f1906fc14e5453cd5b43dcd32316	no	6
Warnings:					
Information:					
8	Fee Worksheet (SB06)	fee-info.pdf	35078 05004abcfe4ed41b3131b7ad1bcd82612543f9fb	no	2
Warnings:					
Information:					
9	Specification	1bc15b0f-d3bb-4b1a-9a58-b11c1513bf8f.docx	53614 52d971a72c93f5aed53e6f5ac9ea781f51d7b0123b546dd80266115d88379033e371e32c04476bd3523304d509edc90d5f7fa9425f36ac952132f27d49c6c7b6	no	19
Warnings:					
Information:					
10	Specification	98ba394d-ff1f-44f0-8aca-7f3a1e553000.pdf	253077 f3701352f396d9640c1ca45cb4d571f46a65ccf7	no	19
Warnings:					
Information:					
11	Claims	70e9cbd8-7b49-494e-9a39-ee78994adde0.docx	27167 fbcfbd51b140f85eca141d1cee305b869401c39f6b350e22c1555fbb6e74a653e3238d0c382b8f5fc047bd39aba83a05915ab49d0e7afd0bde87e937ab814ba3	no	3
Warnings:					
Information:					
12	Claims	cb8e0051-9b85-404d-bf61-fd480631e1cf.pdf	17479 b3bc6f30a820fba46dc3b58feca9386f0604842c	no	3
Warnings:					
Information:					
13	Abstract	e5c95ad5-108c-4483-829d-d761d65a5b70.docx	24255 75b6f55cb57924e035020fe589d3a5150eb4680b09267619024bf2acf5d96743ea0fae926ca68c43dd8276e24c6905cc7276a1c70e8eb5cf512dda1e7d54935c	no	1
Warnings:					
Information:					

14	Abstract	6ac25588-40af-49a2-9bc4-6a9568a1d728.pdf	4373 bf79db0f6aef072fbab90a7ab5f792986933f53e	no	1

Warnings:	
Information:	
Total Files Size (in bytes):	6293989

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	3388.01-P13943US
	Application Number	
Title of Invention	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Tony	M.	Pearce	

Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Alpine	UT	US

Mailing Address of Inventor:

Address 1	123 E 200 N
Address 2	
City	Alpine
State/Province	UT
Postal Code	84004
Country	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Lars	Christen	Hamilton	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

City	State/Province	Country of Residence
Alpine	UT	US

Mailing Address of Inventor:

Address 1	177 North Meadowbrook Drive
Address 2	
City	Alpine
State/Province	UT
Postal Code	84004
Country	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Tanner	Rick	Wheadon	

Residence Information (Select One) ◉ US Residency Non US Residency Active US Military Service

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	3388.01-P13943US
	Application Number	
Title of Invention	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS	

City	Lehi, UT 84043	State/Province	UT	Country of Residence	US

Mailing Address of Inventor:

Address 1	1784 South 900 West		
Address 2			
City	Lehi, UT 84043	**State/Province**	UT
Postal Code	84043	**Country**	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	24247		
Email Address	usptomail@traskbritt.com	Add Email	Remove Email

Application Information:

Title of the Invention	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS		
Attorney Docket Number	3388.01-P13943US	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	6	**Suggested Figure for Publication (if any)**	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	3388.01-P13943US
	Application Number	
Title of Invention	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS	

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	◯ Limited Recognition (37 CFR 11.9)
Customer Number	24247		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	3388.01-P13943US
	Application Number	
Title of Invention	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS	

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	3388.01-P13943US
	Application Number	
Title of Invention	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	3388.01-P13943US
	Application Number	
Title of Invention	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 — Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	Purple Innovation, LLC		
Mailing Address Information For Applicant:			
Address 1	123 East 200 North		
Address 2			
City	Alpine	**State/Province**	UT
Country	US	Postal Code	84004
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	3388.01-P13943US
	Application Number	
Title of Invention	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Kyle Woodhouse/			Date (YYYY-MM-DD)	2017-11-17
First Name	Kyle	Last Name	Woodhouse	Registration Number	70,087

Additional Signature may be generated within this form by selecting the Add button. Add

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	3388.01-P13943US
	Application Number	
Title of Invention	MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS	

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Purple Innovation, LLC

Application No./Patent No.: _____ Filed/Issue Date: _____

Titled: MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS

Purple Innovation, LLC, a Limited Liability Company

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

   The document was recorded in the United States Patent and Trademark Office at

   Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

   The document was recorded in the United States Patent and Trademark Office at

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This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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STATEMENT UNDER 37 CFR 3.73(c)

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☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Kyle M. Woodhouse/	11/17/2017
Signature	Date
Kyle M. Woodhouse	70,087
Printed or Typed Name	Title or Registration Number

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Attorney Docket No. 3388.01-P13943US

ASSIGNMENT

FOR GOOD AND VALUABLE CONSIDERATION, the receipt, sufficiency and adequacy of which are hereby acknowledged, each undersigned ASSIGNOR does hereby:

SELL, ASSIGN AND TRANSFER to **PURPLE INNOVATION, LLC** ("ASSIGNEE"), an entity of US, having a place of business at 123 East 200 North, Alpine, UT 84004 US, the entire right, title and interest for the United States and all foreign countries in and to any and all improvements that are disclosed in the **Application for United States Letters Patent** that has been executed by each undersigned ASSIGNOR concurrently herewith (or ASSIGNOR does hereby authorize and request attorneys, TraskBritt, PC, of P.O. Box 2550, Salt Lake City, Utah 84110, to insert here in parenthesis (Application No. _____, filed _____) the filing date and application number of said application when known), and titled **MATTRESSES INCLUDING AN ELASTOMERIC CUSHIONING ELEMENT AND A POCKETED COIL LAYER AND RELATED METHODS**, such application and all divisional, continuing, substitute, renewal, reissue and all other applications for patent or the legal equivalent thereof that have been or may be filed in the United States and all foreign countries relating to any of such improvements; all original, reexamined and reissued patents that have been or shall be issued in the United States and all foreign countries on such improvements; and specifically including the right to file foreign applications under the provisions of any convention or treaty and claim priority based on such application made in the United States;

AUTHORIZE the ASSIGNEE to apply for and receive any and all United States and foreign patents relating to such improvements in its own name;

AUTHORIZE AND REQUEST the issuing authority to issue any and all United States and foreign patents granted on such improvements to and in the name of the ASSIGNEE;

WARRANT AND COVENANT that no assignment, grant, mortgage, license or other agreement or encumbrance affecting the rights and property herein conveyed has been or will be made or entered into by the undersigned, and that the full right to convey the same as herein expressed is possessed by the undersigned;

COVENANT, when requested and at the expense of the ASSIGNEE, to carry out in good faith the intent and purpose of this Assignment, to execute all divisional, continuing, substitute, renewal, reissue, and all other patent applications relating to any and all such improvements; to execute all rightful oaths, declarations, assignments, powers of attorney and other papers; to communicate to the ASSIGNEE all facts and provide to the ASSIGNEE all documents and things known and accessible to the undersigned relating to such improvements and the history thereof, and testify as to the same in any interference, litigation or other

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proceeding relating thereto; and generally to do everything possible that the ASSIGNEE shall consider desirable for vesting title to such improvements in the ASSIGNEE, and to secure, maintain, defend and enforce valid and enforceable patent protection for such improvements;

AGREE AND ACKNOWLEDGE that the SALE, ASSIGNMENT AND TRANSFER of rights and property set forth herein is and shall be IRREVOCABLE and BINDING upon the heirs, assigns, representatives and successors of each undersigned ASSIGNOR and EXTEND to the successors, assigns and nominees of the ASSIGNEE.

ASSIGNOR:

DocuSigned by:
Tony Pearce
D8A0FE65ECD44BC...

Date: 11/17/2017

Tony M. Pearce
Residing at: 123 E 200 N, Alpine, UT 84004

COUNTY OF)
: ss.
STATE OF)

On this _____ day of _____, 2017, before me personally appeared TONY M. PEARCE, to me known to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he/she executed the same.

_____
Notary Public in and for said County and State

My Commission Expires:

_____

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ASSIGNOR:

Date: 15 November 2017

Lars Christen Hamilton
Residing at: 177 North Meadowbrook Drive, Alpine, UT 84004

COUNTY OF Utah)
: ss.
STATE OF Utah)

On this 15 day of NOV, 2017, before me personally appeared LARS CHRISTEN HAMILTON, to me known to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he/she executed the same.

Notary Public in and for said County and State

My Commission Expires:
5/14/2018

Gary L. Fish
Notary Public
State of Utah
Commission # 677407
COMM. EXP. 05/14/2018

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ASSIGNOR:

Date: 15 November 2017

Tanner Rick Wheadon
Residing at: 1784 South 900 West, Lehi, UT 84043, UT 84043

COUNTY OF Utah)
: ss.
STATE OF Utah)

On this 15 day of Nov, 2017, before me personally appeared TANNER RICK WHEADON, to me known to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he/she executed the same.

Notary Public in and for said County and State

My Commission Expires:
05/14/2018

Gary L. Fish
Notary Public
State of Utah
Commission # 677407
COMM. EXP. 05/14/2018

ACCEPTED BY ASSIGNEE:
PURPLE INNOVATION, LLC

By: _____
Its: _____
Date: _____

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