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## (72) Inventor; and

(71) Applicant : PHILLIPS, Roderick William [CA/CA];  
6775 Fleming Street, Vancouver, British Columbia V5P  
3H4 (CA).

(74) Agents: SMART & BIGGAR et al.; 2300-1055 West  
Georgia Street, PO Box 11115, Vancouver, British  
Columbia V6E 3P3 (CA).

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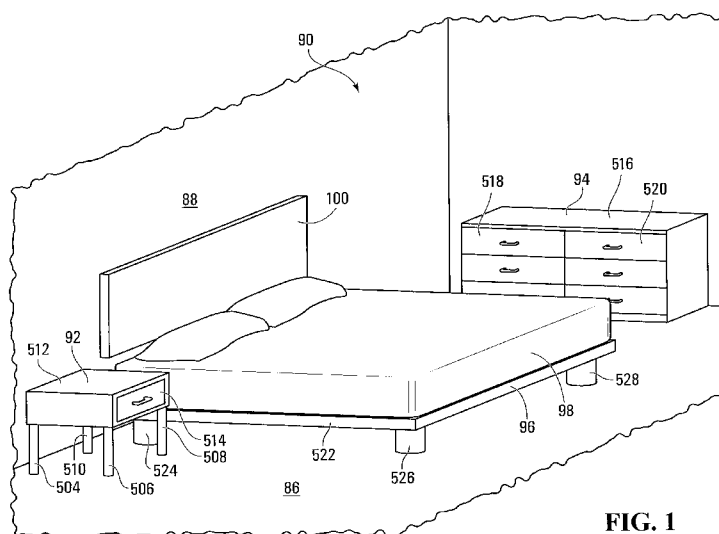


FIG. 1

(57) Abstract: According to one illustrative embodiment, there is provided an apparatus for holding a decorative cover. The apparatus comprises: a body having front and rear opposite sides, the front side of the body having a front surface having a perimeter, the rear side of the body having a rear surface, and the body having an outwardly facing lateral surface between the front and rear surfaces; and a first connector on the body, the first connector detachably connectable, continuously adjacent at least a portion of the perimeter of the front surface, to a second connector, complementary to the first connector, on the decorative cover. According to another illustrative embodiment, there is provided a furniture apparatus comprising at least one substantially thermoplastic body and one or both of diatomaceous earth and a PA1b-related peptide incorporated in one or more of the at least one body.

## FURNITURE APPARATUSES, AND KITS, SYSTEMS, AND USES OF SAME

This application claims the benefit of United States provisional patent application no. 61/482,067 filed May 3, 2011, and of United States provisional patent application no. 61/563,220 filed November 23, 2011. The entire contents of both  
5 United States provisional patent application no. 61/482,067 filed May 3, 2011 and United States provisional patent application no. 61/563,220 filed November 23, 2011 are incorporated by reference herein.

### BACKGROUND

#### 1. Field

10 The invention relates generally to an apparatus for holding a decorative cover, a kit and a system including the same, a headboard apparatus comprising a substantially thermoplastic body, a furniture apparatus comprising diatomaceous earth, legume extracts, or both, and use of one of the apparatuses, kits, or systems to control a population of animals.

#### 15 2. Related Art

Many bedrooms in homes and hotels, for example, include headboards, which may be attached to a head of a bed, or which may be attached to a wall proximate the head of the bed. Many conventional headboards include a decorative cover upholstered to a wooden frame. However, wood is disadvantageously difficult to  
20 clean, and upholstered decorative covers may be difficult or impossible to replace. Generally, once an upholstered cover is removed from a frame, the cover will be significantly damaged where it was attached, and either not reusable or reusable only on a smaller frame. Therefore, if such a headboard becomes infested with *Cimex lectularius* (also known as "bedbugs") or if there is a desire to change the  
25 decorative cover for a new colour scheme, for example, then generally such conventional headboards must be discarded and replaced. Discarding and replacing headboards is wasteful and environmentally damaging, and may be very

expensive or cost-prohibitive for large institutions such as hotels, for example. Further, in some institutions such as hotels for example, closing large parts or all of the hotel for bedbug or other pest removal can result in significant loss of revenue.

There have been attempts to attach decorative covers by techniques other than conventional upholstery. For example, United States Patent No. 2,508,506 to Fridolph ("Fridolph") discloses receiving fastener heads, which are around a perimeter of a decorative panel, in respective recesses on a frame, and then in respective slots adjacent the recesses. The slots hold the fastener heads, and thus the decorative panel, to the frame. However, such a technique attaches the decorative panel only at discrete locations of the fastener heads, thereby leaving unsightly gaps along the perimeter of the decorative panel between the discrete locations where the decorative panel is attached. Further, to position the fastener heads in the slots, the fastener heads must be received in the respective recesses and then slid from the respective recesses into the adjacent slots. Disadvantageously, sliding the fastener heads from respective recesses into respective slots may require stretching or deforming the decorative panel. Further, the fastener heads may have to be spaced a minimum distance from the decorative panel to permit such sliding, and because of such spacing the fastener heads may not hold the decorative panel close to the frame. The decorative panel may therefore not be tightly held against the frame, disadvantageously giving the decorative panel a loose or saggy appearance. It is believed that at least because of such disadvantages, a headboard as disclosed by Fridolph would not be commercially viable and is unlikely to have been produced commercially.

Also, United States Patent No. 5,195,195 to Murray ("Murray") discloses covering a front side of a headboard with fabric, and positioning tubing in a groove in a back side of the headboard to hold the fabric in the groove under the tubing. However, such a technique requires carefully positioning the fabric on the headboard, and maintaining the fabric in position while the tubing is positioned in the groove. Simultaneously holding the fabric and positioning the tubing is disadvantageously

cumbersome and time-consuming. Again, it is believed that at least because of such disadvantages, a headboard as disclosed by Murray would not be commercially viable and is unlikely to have been produced commercially.

Some known methods of controlling bedbug and other pest populations involve using certain pesticides, but some pesticides may be harmful to humans and to other life. Other known methods of controlling bedbug populations include applying diatomaceous earth, but known methods of applying diatomaceous earth can be cumbersome. For example, known methods of applying diatomaceous earth may undesirably require handling the diatomaceous earth. Further, known methods may be sufficiently complex so as to require professional involvement, which may undesirably add to cost and delay of bedbug treatment.

## SUMMARY

According to one illustrative embodiment, there is provided an apparatus for holding a decorative cover. The apparatus comprises: a body having front and rear opposite sides, the front side of the body having a front surface having a perimeter, the rear side of the body having a rear surface, and the body having an outwardly facing lateral surface between the front and rear surfaces; and a first connector on the body, the first connector detachably connectable, continuously adjacent at least a portion of the perimeter of the front surface, to a second connector, complementary to the first connector, on the decorative cover.

The first connector may be on the lateral surface. The first connector may comprise a hook side of a hook-and-loop connector. The first connector may comprise a loop side of a hook-and-loop connector.

The first connector may extend adjacent at least a majority of the perimeter of the front surface. The first connector may extend adjacent substantially the entire perimeter of the front surface.

The apparatus may further comprise a third connector for mounting the apparatus on a wall. The third connector may comprise a first edge on the rear side of the body for coupling with a complementary edge on a fourth connector mounted to the wall. The third connector may comprise a first plurality of spaced apart edges on the rear side of the body for coupling with respective complementary edges on the fourth connector.

The apparatus may further comprise a fifth connector for mounting the apparatus on a wall. The fifth connector may comprise a second edge on the rear side of the body for coupling with the complementary edge on the fourth connector. The second edge may extend non-parallel to the first edge. The second edge may extend perpendicular to the first edge. The fifth connector may comprise a second plurality of spaced apart edges on the rear side of the body for coupling with the respective complementary edges on the fourth connector.

The apparatus may further comprise a bed frame connector for connecting the body to a bed frame. The bed frame connector may comprise at least one receptacle defined by the body for receiving at least one respective support attachable to the bed frame.

The apparatus may further comprise a light source connector for connecting a light source proximate the lateral surface. The light source may comprise a plurality of lights in a light string, and the light source connector may comprise a plurality of clips for holding the light string proximate the lateral surface. The lateral surface of the body may comprise a translucent portion for transmitting light from the light source. The apparatus may further comprise a translucent cover connectable to the lateral surface of the body for covering the light source.

The body may define a storage compartment on the rear side of the body for storing objects.

The apparatus may further comprise an inclination measuring device for measuring inclination of the body. The inclination measuring device may comprise a bubble level.

5 The front surface may define a recess for receiving padding between the body and the decorative cover. The body may define a plurality of through-openings extending between the front and rear surfaces, the through-openings for receiving respective fasteners receivable through the padding and through the decorative cover to compress the padding in respective regions surrounding the respective fasteners. The front surface may comprise a generally flat planar portion and an  
10 inward-facing portion between the generally flat planar portion and the lateral surface of the body. The generally flat planar portion of the front surface and the inward-facing portion of the front surface may define the recess. An adjacent similar apparatus may be stackable against the rear side of the body. The body may define a first projection having the lateral surface and the inward-facing portion  
15 of the front surface, and at least a portion of the lateral surface may be positioned to contact at least a portion of the inward-facing portion of the front surface of an adjacent similar apparatus such that the adjacent similar apparatus is stackable against the rear side of the body when the at least the portion of the lateral surface contacts the at least the portion of the inward-facing portion of the front surface of  
20 the adjacent similar apparatus.

The body may define, on the rear surface, at least one additional projection configured to contact the adjacent similar apparatus when the adjacent similar apparatus is stacked against the rear side of the body.

25 The body may be substantially thermoplastic. The body may comprise carbon plastic. The body may comprise a PA1b-related peptide incorporated in the body. The body may further comprise saponin incorporated in the body. The body may comprise diatomaceous earth incorporated in the body. The diatomaceous earth may be about 30% by weight of the body.

According to another illustrative embodiment, there is provided a kit comprising the apparatus and the decorative cover.

According to another illustrative embodiment, there is provided a kit comprising the apparatus, the padding, and the decorative cover.

- 5 According to another illustrative embodiment, there is provided a system comprising the apparatus and the decorative cover, wherein the first connector is connected to the second connector such that the decorative cover covers at least a portion of the front surface of the body surrounded by the perimeter of the front surface of the body.
- 10 According to another illustrative embodiment, there is provided a system comprising the apparatus, the padding, and the decorative cover, wherein the first connector is connected to the second connector such that the decorative cover covers at least a portion of the front surface of the body surrounded by the perimeter of the front surface of the body, and such that the decorative cover holds
- 15 the padding between the body and the decorative cover and in the recess for receiving padding.

According to another illustrative embodiment, there is provided a headboard apparatus comprising a substantially thermoplastic body having a holder for holding a decorative cover. The body may comprise carbon plastic.

- 20 According to another illustrative embodiment, there is provided a furniture apparatus comprising at least one substantially thermoplastic body and a PA1b-related peptide incorporated in one or more of the at least one body. The body may further comprise saponin incorporated in the body. The body may further comprise diatomaceous earth incorporated in the body. The diatomaceous earth may be
- 25 about 30% by weight of the one or more of the at least one body. The at least one body may comprise carbon plastic.

According to another illustrative embodiment, there is provided a furniture apparatus comprising at least one substantially thermoplastic body and diatomaceous earth incorporated in one or more of the at least one body. The diatomaceous earth may be about 30% by weight of the one or more of the at least one body. The at least one body may comprise carbon plastic.

The furniture apparatus may comprise an apparatus for holding a decorative cover.

The furniture apparatus may comprise a bed. The at least one substantially thermoplastic body may comprise at least one support for contacting a floor of a room, and the bed may comprise a platform supportable by the at least one support and configured to support a mattress on the platform.

The furniture apparatus may comprise a table. The at least one substantially thermoplastic body may comprise at least one support for contacting a floor of a room, and the table may comprise a platform supportable by the at least one support.

The furniture apparatus may comprise a dresser or a nightstand.

The diatomaceous earth may comprise CELATOM<sup>TM</sup> MN-51. The diatomaceous earth may have a median particle diameter of about 15 microns. The diatomaceous earth may have a median particle diameter of more than about 14 microns. The diatomaceous earth may be about 5.6% CaO. The diatomaceous earth may comprise more than about 0.9% CaO. The diatomaceous earth may be about 7.8% Al<sub>2</sub>O<sub>3</sub>. The diatomaceous earth may comprise more than about 5.6% Al<sub>2</sub>O<sub>3</sub>. The diatomaceous earth may have a pH of about 7.5 in a 10% slurry. The diatomaceous earth may have a pH of more than about 7.0 in a 10% slurry. The diatomaceous earth may be about 73.6% SiO<sub>2</sub>. The diatomaceous earth may be less than about 83.7% SiO<sub>2</sub>. The diatomaceous earth may be about 1.8% Fe<sub>2</sub>O<sub>3</sub>. The diatomaceous earth may be less than about 2.3% Fe<sub>2</sub>O<sub>3</sub>. The diatomaceous earth may comprise less than about 5.0% H<sub>2</sub>O by weight. The diatomaceous earth may be about 3.0% H<sub>2</sub>O by weight. The diatomaceous earth may absorb water in



an amount of about 165% by weight. The diatomaceous earth may be about 0.3% MgO. The diatomaceous earth may be heat-treated. The diatomaceous earth may be flash dried. The diatomaceous earth may be flash dried at about 480 °C.

According to another illustrative embodiment, there is provided use of the apparatus, the kit, or the system to control one or more of a population of animals having exoskeletons, a population of arthropods, a population of arachnids, a population of insects, and a population of *Cimex lectularius*.

Other aspects and features will become apparent to those ordinarily skilled in the art upon review of the following description of specific embodiments in conjunction with the accompanying figures.

## BRIEF DESCRIPTION OF THE DRAWINGS

In drawings of illustrative embodiments:

- Figure 1 is an oblique view of an illustrative room;
- Figure 2 is an exploded oblique view of a headboard system of the room of Figure 1;
- Figure 3 is an oblique view of a decorative cover of the headboard system of Figure 2;
- Figure 4 is a front oblique view of a body of the headboard system of Figure 2;
- Figure 5 is a rear oblique view of the body of Figure 4;
- Figure 6 is a cross-sectional view of the body of Figure 4 along the line VI-VI in Figure 5;
- Figure 7 is a cross-sectional view of the body of Figure 4 along the line VII-VII in Figure 5;

- Figure 8 is a cross-sectional view of an illustrative system of bodies including the cross-sectional view of Figure 7;
- Figure 9 is an oblique view of an electrical switch on the body of Figure 4;
- Figure 10 is a partial oblique view of the body Figure 4 and a cleat of the headboard system of Figure 2;
- Figure 11 is a cross-sectional view of the headboard system of Figure 2 including the cross-sectional view of Figure 7;
- Figure 12 is a partial cross-sectional view of another illustrative body;
- Figure 13 is a cross-sectional view of an illustrative system of bodies including the cross-sectional view of Figure 12;
- Figure 14 is a front oblique view of another illustrative body;
- Figure 15 is a rear oblique view of the body of Figure 14 and of an illustrative cleat;
- Figure 16 is a partial rear oblique view of the body of Figure 14;
- Figure 17 is a front plan view of another illustrative body;
- Figure 18 is a rear oblique view of the body of Figure 17;
- Figure 19 is a cross-sectional view of the body of Figure 17 along the line XIX-XIX in Figure 17;
- Figure 20 is a rear oblique view of another illustrative body;
- Figure 21 is a rear plan view of another illustrative body;
- Figure 22 is a front plan view of an illustrative French cleat;

Figure 23 is a cross-sectional view of an illustrative system including the body of Figure 21 and the French cleat of Figure 22 taken along the lines XXIII-XXIII in Figures 21 and 22;

5 Figure 24 is a cross-sectional view of an illustrative system including a cross-sectional view of the body of Figure 21 taken along the line XXIV-XXIV in Figure 21;

Figure 25 is a rear oblique view of another illustrative body;

Figure 26 is a front elevational view of another illustrative body;

Figure 27 is a front elevational view of another illustrative body; and

10 Figure 28 is a front elevational view of another illustrative body.

## DETAILED DESCRIPTION

Referring to Figure 1, an illustrative room includes a floor 86, a wall 88, and an illustrative furniture system shown generally at 90 and including a nightstand 92, a dresser 94, a bed 96, a mattress 98, and a headboard system 100.

15 Referring to Figure 2, the headboard system 100 includes a decorative cover 102, padding 104, a body 106, and a wall-mountable cleat 108. The decorative cover 102 in the embodiment shown includes a generally rectangular portion 110 having an outer surface 112. The outer surface 112 may include any decorative colours, ornamentation, or pattern, for example. The decorative cover 102 also includes  
20 lateral portions 114, 116, 118, and 120 extending generally from a perimeter of the generally rectangular portion 110 and generally perpendicular to the generally rectangular portion 110. The generally rectangular portion 110 and the lateral portions 114, 116, 118, and 120 may be made from any commonly available fabric and may be stitched together, for example.

25 Referring to Figure 3, the lateral portions 114, 116, 118, and 120 have respective inner surfaces 122, 124, 126 and 128 facing the generally rectangular portion 110.

The lateral portions **114**, **116**, **118**, and **120** also have respective outer edges **130**, **132**, **134**, and **136**. The decorative cover **102** also has a connector **138** on the inner surfaces **122**, **124**, **126**, and **128** proximate the outer edges **130**, **132**, **134**, and **136**. In the embodiment shown, the connector **138** is a so-called “loop side” of a hook-and-loop connector, such as the hook-and-loop connector commonly known as VELCRO™ for example.

Referring back to Figure 2, the padding **104** in the embodiment shown includes a generally rectangular body made from one or more of many commonly available foam materials. In alternative embodiments, the padding **104** may include an air bladder or feather padding, for example. Therefore the padding **104** in some embodiments may be selected to avoid undesired allergens, for example. The padding **104** may include a fire-retardant substance as may be required by law. Further, the padding **104** is sized to be received in a recess shown generally at **140** in Figure 3 and defined by the generally rectangular portion **110** and the lateral portions **114**, **116**, **118**, and **120** of the decorative cover **102**.

Referring to Figures 2, 4, and 5, the body **106** has a front side shown generally at **142** and having a front surface **144** having a perimeter **146**. The body **106** also has a rear side shown generally at **148** opposite the front side **142** and having a rear surface **150**. The body **106** also has an outwardly facing lateral surface **152** between the front surface **144** and the rear surface **150**. Further, a connector **154** is on the body **106** continuously adjacent at least a portion of the perimeter **146** of the front surface **144**. In the embodiment shown, the connector **154** is a so-called “hook side” of a hook-and-loop connector, such as the hook-loop-connector commonly known as VELCRO™ for example.

Therefore, the connector **154** (which may be referred to as “a first connector” or more generally as “a holder”) on the body **106** is detachably connectable to the connector **138** (which may be referred to as “a second connector”) on the decorative cover **102**. In the embodiment shown, the connector **138** on the decorative cover **102** and the connector **154** on the body **106** are so-called “loop

side” and “hook side” sides respectively of a hook-and-loop connector, and thus the connector **154** on the body **106** is complementary to the connector **138** on the decorative cover **102**.

5 In alternative embodiments, the decorative cover **102** may include a “hook side” of a hook-and-loop connector and the body **106** may include a “loop side” of the hook-and-loop connector, for example. Also, although the connector **154** is on the lateral surface **152** of the body **106** in the embodiment shown, the connector **154** may be on the front surface **144** or on the rear surface **150**, for example, in alternative embodiments. Thus, “adjacent the perimeter **146**” in this context does not require  
10 the connector **154** to adjoin or be precisely on the perimeter **146**, but rather it includes embodiments where the connector **154** is close enough to the perimeter **146** that when the connector **154** is connected to the connector **138**, the decorative cover **102** appears to cover at least a portion of the front surface **144** surrounded by the perimeter **146** such that the headboard system **100** generally functions as a  
15 headboard or more generally as a decorative panel.

Further, in the embodiment shown, the connector **154** extends adjacent the entire perimeter **146** of the front surface **144**. However, in alternative embodiments, the connector **154** may extend adjacent substantially the entire perimeter **146** of the front surface **144**, or the connector **154** may extend adjacent at least a majority of  
20 the perimeter **146** of the front surface **144**. The connector **154** may be considered to extend adjacent “substantially” the entire perimeter **146** of the front surface **144** if the connector **154** extends adjacent a sufficient portion of the perimeter **146** such that the connector **154** is connectable to the connector **138** on the decorative cover **102** such that the decorative cover **102** appears to be connected continuously on  
25 the body **106**.

Still referring to Figures **2** and **4**, the body **106** defines a projection **156** having the lateral surface **152** and an inward-facing surface **158**. In the embodiment shown, the front surface **144** of the body **106** includes the inward-facing surface **158** of the projection **156**, and a generally flat planar portion **160**. Further, the inward-facing

surface **158** is between the generally flat planar portion **160** and the lateral surface **152** of the body **106**. The inward-facing surface **158** and the generally flat planar portion **160** define a recess shown generally at **162** for receiving the padding **104** between the body **106** and the decorative cover **102**.

- 5 Referring to Figures **2**, **4**, and **5**, the body **106** defines through-openings shown generally at **164**, **166**, **168**, **170**, **172**, **174**, **176**, **178**, and **180** in the generally flat planar portion **160** of the front surface **144** and extending between the front surface **144** and the rear surface **150**. As shown in Figure **5**, on the rear side **148**, the body **106** defines respective cleats proximate the through-openings **164**, **166**, **168**, **170**,  
10 **172**, **174**, **176**, **178**, and **180**. For example, referring to Figure **6**, the body **106** defines a cleat **182** on the rear side **148** and proximate the through-opening **172**. The cleat **182** includes a relatively wide portion shown generally at **184**, and a relatively narrow portion shown generally at **186** between the relatively wide portion **184** and the rear surface **150**. The cleat **182** thus permits a thread or string that is  
15 passed through the through-opening **172** to be tied around the relatively narrow portion **186** and held in position by the relatively wide portion **184**.

- Referring to Figures **2**, **5**, and **6**, the padding **104** may be received in the recess **162** of the body **106**, and also in the recess **140** (also shown in Figure **3**) of the decorative cover **102**. For example, using a needle (not shown), thread or string  
20 may be passed through one or more of the through-openings **164**, **166**, **168**, **170**, **172**, **174**, **176**, **178**, and **180**, through the padding **104** and the decorative cover **102**, through a button (not shown), and back through the decorative cover **102**, the padding **104**, and the through-openings of the body **106**. The thread or string may then be fastened to a respective cleat, such as the cleat **182** shown in Figure **6**, for  
25 example. Therefore, the through-openings and respective cleats permit respective buttons (not shown) to be pulled against the decorative cover **102** and the padding **104** to compress regions of the padding **104** proximate the buttons to impart a textured appearance to the outer surface **112** of the decorative cover **102**. In that example, the buttons and thread or string function as fasteners received through

the through-openings, through the padding **104**, and through the decorative cover **102** to compress the padding **104** in respective regions surrounding the respective fasteners.

Referring to Figures **2**, **4**, and **5**, the body **106** defines additional through-openings **188**, **190**, **192**, **194**, **196**, **198**, and **200** extending between the front surface **144** and the rear surface **150**. Such additional through-openings in some embodiments may reduce weight and production cost of the body **106**. In alternative embodiments, the through-openings **188**, **190**, **192**, **194**, **196**, **198**, and **200** may be omitted or may have different shapes, or may alternatively be closed with a thin film of thermoplastic material (not shown). Such a thin film of thermoplastic material in some embodiments may protect padding (such as the padding **104** shown in Figure **2**, for example) by preventing such padding from passing through the through-openings **188**, **190**, **192**, **194**, **196**, **198**, and **200**, or by preventing objects that may damage the padding from passing through the through-openings **188**, **190**, **192**, **194**, **196**, **198**, and **200**.

Referring to Figure **5**, on the rear side **148**, the body **106** in the embodiment shown also defines a plurality of structural ribs, such as illustrative structural ribs **202** and **204** to impart additional strength to the body **106**.

Referring to Figure **7**, in the embodiment shown, the projection **156** extends at an oblique angle **206** from the generally flat planar portion **160** of the body **106**, and the body **106** also defines a projection **208** on the rear side **148** extending generally perpendicularly from the generally flat planar portion **160**. In the embodiment shown, the connector **154** is on the projection **208**, and the lateral surface **152** is on the projection **156** and **208**. However, in alternative embodiments, the connector **154** may be on the projection **156** or, as indicated above, on the front surface **144** or on the rear surface **150**.

Referring to Figure **8**, the body **106** is stackable against an adjacent similar body **210** on the front side **142** of the body **106**, and against an adjacent similar body

**212** on the rear side **148** of the body **106**. In the embodiment shown, the adjacent similar body **210** has a lateral surface **214** that is substantially the same as the lateral surface **152** of the body **106**, and the lateral surfaces **152** and **214** are positioned such that a portion of the lateral surface **214** of the adjacent similar body **210** contacts a portion of the inward-facing surface **158** of the body **106** when the adjacent similar body **210** is received in the recess **162** of the body **106** and stacked against the front side **142**. Further, the adjacent similar body **212** has an inward-facing surface **216** that is substantially the same as the inward-facing surface **158** of the body **106**, and at least a portion of the lateral surface **152** of the body **106** contacts at least a portion of the inward-facing surface **216** of the adjacent similar body **212** when the adjacent similar body **212** is stacked against the rear side **148** of the body **106**.

Referring back to Figure 5, the body **106** defines additional projections **218**, **220**, **222**, **224**, **226**, **228**, **230**, **232**, and **234** on the rear side **148**. Referring back to Figure 7, the projection **218** defines a cavity **236** and an opening shown generally at **238** on the rear side **148** of the body **106** and in communication with the cavity **236**. The body **106** also defines an opening **240** extending between the front surface **144** of the body **106** and the cavity **236**. Referring back to Figure 5, the projections **220**, **222**, **224**, **226**, **228**, **230**, **232**, and **234** are substantially the same as the projection **218** and define respective openings shown generally at **242**, **244**, **246**, **248**, **250**, **252**, **254**, and **256** that are substantially the same as the opening **238**. In general, the openings **238**, **242**, **244**, **246**, **248**, **250**, **252**, **254**, and **256** face inwardly from respective cavities in the respective projections.

Referring back to Figure 8, the adjacent similar bodies **210** and **212** have respective projections **258** and **260** that are substantially the same as the projection **218**. When the adjacent similar body **210** is stacked against the front side **142** of the body **106**, the projection **258** of the adjacent similar body **210** contacts the front surface **144** of the body **106**, and when the adjacent similar body **212** is stacked against the rear side **148** of the body **106**, the projection **218**



contacts a front surface **262** of the adjacent similar body **212** that is substantially the same as the front surface **144** of the body **106**. Referring to Figures **5** and **8**, the projections **218**, **220**, **222**, **224**, **226**, **228**, **230**, **232**, **234**, **258**, and **260** in some embodiments may thus increase contact between stacked bodies such as the stacked bodies **106**, **210**, and **212** as illustrated in Figure **8**, for example, and such embodiments may thus have added stability in a stacked system of bodies, such as the stacked system shown in Figure **8** for example.

Referring back to Figure **5**, on the rear side **148**, the body **106** also has a plurality of clips, such as illustrative clips **264** and **266**, proximate the projection **208**. Referring back to Figure **7**, the clip **266** includes a deformable curled portion **268** for detachably receiving a light source (not shown) such as a light string of light-emitting diodes ("LEDs"), for example. Thus, referring back to Figure **5**, the plurality of clips shown proximate the projection **208** function as a light source connector to connect such a light string to the body **106** substantially around a perimeter of the rear surface **150** of the body **106**. Alternative connectors for the light source may include tape, for example.

Still referring to Figure **5**, electrical switches **270** and **272** are positioned on the projection **208** of the body **106** through the lateral surface **152**. Referring to Figure **9**, the electrical switch **270** is illustrated, and the electrical switch **272** is substantially the same. The electrical switches **270** and **272** in the embodiment shown are three-way switches, and thus both can be connected to a light source (not shown) such that either electrical switch **270** or **272** can turn the light source on or off. The body **106** may also have a voltage converter (not shown) to supply an appropriate voltage to the light string of LEDs, for example.

Referring back to Figure **7**, the projection **208** in the embodiment shown includes a translucent portion **274** for transmitting light from a light source (not shown) held in the clips such as the clips **264** and **266**. Alternative embodiments may include a detachable translucent cover, or alternatively the translucent portion **274** may be omitted to leave a gap in the body **106** in place of the translucent portion **274**,

through which light may pass. Although in the embodiment shown the only translucent portion is the translucent portion **274**, in alternative embodiments other portions or substantially all of the body **106** may be translucent, in which embodiments the body **106** may be formed of a single type of thermoplastic material.

Referring back to Figure **2**, the cleat **108** defines a plurality of through-openings, such as illustrative through-openings **276** and **278**, for receiving fasteners (not shown) to mount the cleat **108** on a wall (such as the wall **88** shown in Figure **1**). Such through-openings are elongate in the embodiment shown to permit fasteners (not shown) to be attached to studs (not shown) in the wall, and to permit the cleat **108** to be slidable relative to such fasteners, which in some embodiments may enable the cleat **108** to be mounted on a wall in a position that may not be unduly restricted by positions of such studs. The cleat **108** also includes projections **280**, **282**, and **284** having respective upper edges **286**, **288**, and **290**. The projections **280**, **282**, and **284** in the embodiment shown are spaced apart by a common spacing distance, and referring back to Figure **5**, the openings **238**, **242**, and **244**, the openings **246**, **248**, and **250**, and the openings **252**, **254**, and **256** are spaced apart by the same spacing distance. Therefore, in one embodiment, the openings **238**, **242**, and **244** may receive the projections **284**, **282**, and **280** respectively to mount the body **106** on the wall (such as the wall **88** shown in Figure **1**) to which the cleat **108** may be mounted. For example, Figure **10** illustrates the projections **280** and **282** received in the openings **244** and **242** respectively.

In some embodiments, projections such as the projections **280**, **282**, and **284** may function as latches that cooperate with inner surfaces of projections such as the projections **222**, **220**, and **218** such that the projections **280**, **282**, and **284** are releasably held within the projections **222**, **220**, and **218** respectively, and such that the projections **280**, **282**, and **284** may be temporarily deformed to release the body **106** from the cleat **108**. The projections **280**, **282**, and **284** in the embodiment shown are accessible from the front side **142** of the body **106**, and may thus

function as release switches to release the body **106** from the cleat **108**, and in some embodiments may hold the body **106** on the cleat **108** such that the body **106** can only be released from the cleat **108** when the decorative cover **102** and padding **104** have been removed. Such releasable connection in such  
5   embodiments may further secure the body **106**, padding **104**, and decorative cover **102** to a wall (such as the wall **88** shown in Figure 1).

Referring to Figures 2 and 5, respective spaced apart edges of the projections **218**, **220**, and **222** thus function as a connector on the body **106** for mounting the body **106** on a wall (such as the wall **88** shown in Figure 1). Further, the plurality of  
10   spaced apart upper edges **286**, **288**, and **290** of the projections **280**, **282**, and **284** respectively thus function as a connector complementary to such a connector on the body **106**.

Still referring to Figures 2 and 5, the projections **280**, **282**, and **284** of the cleat **108** may alternatively be received in the openings **246**, **248**, and **250** respectively of the  
15   projections **224**, **226**, and **228** respectively. The projections **224**, **226**, and **228** include edges that are complementary to the upper edges **286**, **288**, and **290** respectively of the projections **280**, **282**, and **284** respectively, and such edges in the projections **224**, **226**, and **228** are generally perpendicular, and more generally non-parallel, to substantially similar edges in the projections **218**, **220**, and **222**.  
20   The body **106** may thus be hung in a manner perpendicular to the manner shown in Figure 10. Further, the projections **284**, **282**, and **280** of the cleat **108** may also be received in the openings **252**, **254**, and **256** respectively of the projections **230**, **232**, and **234** respectively, again mounting the body **106** perpendicular to the manner shown in Figure 10. The plurality of respective spaced apart edges of the  
25   projections **224**, **226**, and **228** thus also function as another connector for mounting the body **106** on a wall (such as the wall **88** shown in Figure 1), and the plurality of respective spaced apart edges of the projections **230**, **232**, and **234** also function as a connector for mounting the apparatus body **106** on a wall.

Referring back to Figure 5, the body **106** in the embodiment shown defines, on the rear side **148**, a storage compartment **292** for storing objects. For example, it may be desirable to store small but valuable objects invisibly within the headboard system **100** (shown in Figure 2). In some embodiments, the storage compartment

5 **292** may hold one or more of buttons, a needle, and thread to impart a textured appearance to the outer surface **112** of the decorative cover **102** as described above, for example. In the embodiment shown, the storage compartment **292** is open at an opening shown generally at **294** on a top side of the storage compartment **292**. However, in alternative embodiments, the storage compartment

10 **292** may include a removable cover, for example.

Referring back to Figure 2, in the embodiment shown, the body **106** has an inclination measuring device **296** on the front side **142**. The cleat **108** also includes an inclination measuring device **298**. The inclination measuring devices **296** and **298** in the embodiment shown are removable bubble levels, which in some

15 embodiments may reveal an inclination of the body **106** and the cleat **108** respectively relative to gravitational force. Such inclination information in such embodiments may assist in positioning the cleat **108** and the body **106** level in a room, for example.

Referring to Figure 11, the headboard system **100** is shown assembled such that

20 the padding **104** is received in the recess **162** of the body **106** and in the recess **140** of the decorative cover **102**. The lateral portions **114**, **116**, **118**, and **120** are positioned over the lateral surface **152** of the body **106** and the connector **154** on the decorative cover **102** is detachably connected to the connector **138** on the body **106**, leaving the outer surface **112** exposed to decorate a room, for example. The

25 body **106** in the embodiment shown thus functions as an apparatus for holding the decorative cover **102**, and may thus function as a headboard for a bed in some embodiments.

The hook-and-loop connectors **138** and **154** in the embodiment shown may avoid time and expense that would be involved with upholstering the decorative cover

**102** to the body **106**. If there is a desire to change the decorative cover **102**, for example to update the outer surface **112** to reflect a new colour scheme, then the decorative cover **102** may be replaced simply by detaching the hook-and-loop connectors **138** and **154** and reattaching a connector **138** of a new decorative cover **102** to the connector **154** of the body **106**.

In the embodiment shown, the body **106** and the cleat **108** are substantially thermoplastic and may be formed from high-density polyethylene or polypropylene, for example, although other thermoplastic materials, such as carbon plastic for example, may alternatively be used. The body **106** and the cleat **108** may include materials that are not thermoplastic, such as the electrical switches **270** and **272** and the inclination measuring devices **296** and **298** for example, but still be “substantially” thermoplastic. In general, a “substantially” thermoplastic body may include principal structural elements that may be formed in a mold, which may permit relatively inexpensive production of a large number of such bodies, but such a “substantially” thermoplastic body may also include elements that are not thermoplastic, such as elements of the electrical switches **270** and **272** and elements of the inclination measuring devices **296** and **298** for example. The body **106** and the cleat **108** may be made from any commonly available thermoplastic material, which may include an additive such as an additive known as ECOPURE™ available from Bio-Tec Environmental, LLC of Albuquerque, New Mexico, for example. Alternative embodiments may include other materials, which may not be thermoplastic in some embodiments.

If the headboard system **100** becomes infested with bedbugs, for example, then the decorative cover **102** and the padding **104** may be removed from the body **106** and either discarded or cleaned and replaced. For example, to kill bedbugs, the decorative cover **102** may be laundered and the padding **104** may be simply left in storage for a sufficient period of time, among other possibilities. Further, the body **106** is substantially thermoplastic and thus may be readily cleaned, and a new or cleaned decorative cover **102** and new or cleaned padding **104** may be installed on

the cleaned body **106**, which in some embodiments may avoid waste, expense, and environmental damage of replacing entire headboards. Such reduced waste and expense may be particularly advantageous in large institutions such as hotels for example, where responding to bedbug infestations can be very costly. Further, 5 if it is desired to change an appearance of the decorative cover **102** or to change the padding **104**, for example, then only those components need be replaced, which may reduce costs to change décor or padding material in one or more rooms or in an entire hotel, for example.

More generally, the headboard system **100** may be more hygienic than known 10 headboards, such as upholstered headboards for example, because the substantially thermoplastic body **106** in some embodiments may be sanitized or otherwise cleaned, and the decorative cover **102** and the padding **104** may be removed, cleaned, and replaced, whereas similar components in upholstered headboards, for example, generally cannot be reused and must be discarded once 15 removed. Therefore, some embodiments of a substantially thermoplastic body having any holder for holding a decorative cover in a headboard may be advantageous over many known headboards.

Further, one or both of the body **106** and the cleat **108** may include diatomaceous earth incorporated therein. In one embodiment, diatomaceous earth is incorporated 20 in the body **106** by adding the diatomaceous earth to the thermoplastic material of the body **106** when the thermoplastic material is in a liquid phase before the thermoplastic material is injected into a mold. In one embodiment, about 30% by weight of the body **106** is diatomaceous earth. Further, additional diatomaceous earth may be adhered to the outwardly facing lateral surface **152** or other surfaces 25 of the body **106**. In some experiments, it has been found that bodies including diatomaceous earth in that manner effectively kill bedbugs that are in proximity to such a body. In one such experiment, such a body continued to cause death to bedbugs for at least one year after the body was manufactured. Therefore, such

materials may further prevent or reduce bedbug infestations, which can be very costly in large institutions such as hotels, for example.

The diatomaceous earth in some embodiments may include CELATOM™ MN-51, which is available from EP Minerals, LLC of 9785 Gateway Drive, Suite 1000, Reno, Nevada, United States of America, and which may be heat-treated or flash dried at about 900 °F (about 480 °C) or at other temperatures, for example. In one embodiment, flash drying diatomaceous earth involves heating the diatomaceous earth at about 900 °F (about 480 °C) for about 15 seconds. It is believed that such heat treatment or flash drying may change the characteristics of the diatomaceous earth to be more abrasive and thus more damaging to animal exoskeletons, or more particularly to bedbug exoskeletons, and that such heat treatment or flash drying may also dry out the diatomaceous earth, thereby making the diatomaceous earth more absorbent to dehydrate and kill an animal such as bedbug and potentially more effective in various embodiments including the various embodiments described herein.

The diatomaceous earth known as CELATOM™ MN-51 may be particularly effective in some embodiments, and such diatomaceous earth is believed to have the following properties.

**Table 1: Properties of CELATOM™ MN-51.**

Structure	Natural
Colour	Beige
G.E. Brightness	75
Sieve Analysis (Tyler)	6.5
% + 325 Mesh (> 44 microns)	
Median Particle Diameter (microns)	15.0

pH (10% slurry)	7.5	
Free Moisture	Less than 5.0  3.0	
(Maximum % H <sub>2</sub> O)		
(Typical % H <sub>2</sub> O)		
Density	(lb/ft <sup>3</sup> )	(g/l)
Wet Bulk	24	385
Dry Bulk	11	176
Specific Gravity	2.00	
Refractive Index	1.46	
Oil Absorption (ASTM F 726-81) % by weight	150	
Water Absorption (ASTM F 726-81) % by weight	165	
Chemical Analysis		
SiO <sub>2</sub>	73.6%	
Al <sub>2</sub> O <sub>3</sub>	7.8%	
Fe <sub>2</sub> O <sub>3</sub>	1.8%	
CaO	5.6%	
MgO	0.3%	
Other Oxides	2.3%	
Loss on Ignition	5.5%	



In an alternative embodiment, the diatomaceous earth may include diatomaceous earth known as CELATOM™ MN-53, which is also available from EP Minerals, LLC of 9785 Gateway Drive, Suite 1000, Reno, Nevada, United States of America. The diatomaceous earth known as CELATOM™ MN-53 is believed to have the following properties.

**Table 2: Properties of CELATOM™ MN-53.**

Structure	Natural	
Colour	Beige	
G.E. Brightness	65	
Sieve Analysis (Tyler) % + 325 Mesh (> 44 microns)	5.0	
Median Particle Diameter (microns)	14.0	
pH (10% slurry)	7.0	
Free Moisture (Maximum % H <sub>2</sub> O) (Typical % H <sub>2</sub> O)	Less than 5.0 3.0	
Density	(lb/ft <sup>3</sup> )	(g/l)
Wet Bulk	31	500
Dry Bulk	11	175
Specific Gravity	2.00	
Refractive Index	1.46	

Oil Absorption (ASTM F 726-81) % by weight	150
Water Absorption (ASTM F 726-81) % by weight	165
Chemical Analysis	
SiO <sub>2</sub>	83.7%
Al <sub>2</sub> O <sub>3</sub>	5.6%
Fe <sub>2</sub> O <sub>3</sub>	2.3%
CaO	0.9%
MgO	0.3%
Other Oxides	1.9%
Loss on Ignition	5.0%

In one experiment on June 23, 2011, small plastic Petri dishes available from Gelman Sciences™, each about 5.0 centimeters ("cm") or about 2.0 inches in diameter, were used in bioassays. A small opening of about 1.5 cm (or about 0.6 inches) in diameter was cut in the lid and closed with a piece of gauze to allow air

5 for bedbug breathing. The Petri dishes were lined with a filter paper about 4.25 cm (or about 1.7 inches) in diameter. Diatomaceous earth was weighed and spread uniformly over the filter paper with forceps. Ten adult field-collected bedbugs were introduced in each of the Petri dishes, and the lids were placed over them to prevent their escape. Petri dishes were transferred in a plastic box lined with paper

10 towels sprayed with water to maintain humidity in the box. Experiments were conducted at room temperature, and mortality was noted 24, 48, 72, and 96 hours after the bedbugs were introduced into of the Petri dishes. Four concentrations, between about 0.5 and about 2.0 milligrams ("mg"), were used to calculate a lowest

lethal concentration sufficient to kill 50% of the bedbugs ("LC<sub>50</sub>") of each product. There was a single replication of 10 bedbugs each.

Tables 3 and 4 below show mortality data from the June 23, 2011 experiment, where *L* refers to a number of bedbugs still living after a corresponding time given in the tables, and *D* refers to a number that died after the time given.

**Table 3: Toxicity of adult bedbugs to CELATOM™ MN-51.**

Time (hours)	Amount of CELATOM™ MN-51							
	2.0 mg		1.0 mg		0.8 mg		0.5 mg	
	<i>L</i>	<i>D</i>	<i>L</i>	<i>D</i>	<i>L</i>	<i>D</i>	<i>L</i>	<i>D</i>
48	0	10	3	7	4	6	5	5
76			0	3	0	4	0	5

**Table 4: Toxicity of adult bedbugs to CELATOM™ MN-53.**

Time (hours)	Amount of CELATOM™ MN-53							
	2.0 mg		1.0 mg		0.8 mg		0.5 mg	
	<i>L</i>	<i>D</i>	<i>L</i>	<i>D</i>	<i>L</i>	<i>D</i>	<i>L</i>	<i>D</i>
48	6	4	9	1	7	3	8	2
76	6	4	9	1	7	3	8	2
92	0	6	4	6	6	4	7	3

All of the bedbugs died in CELATOM™ MN-51 diatomaceous earth after 48 hours. Therefore, LC<sub>50</sub> for CELATOM™ MN-51 was calculated for 48 hours only, and LC<sub>50</sub> after 48 hours for CELATOM™ MN-51 was calculated as 0.7 mg. The data after 48

hours for CELATOM™ MN-53 were not good for calculation, and therefore LC<sub>50</sub> for CELATOM™ MN-53 was calculated after 96 hours as 0.8 mg (0.552-1.052).

The relatively low LC<sub>50</sub> for CELATOM™ MN-51 suggests that CELATOM™ MN-51 may be more toxic for bedbugs than CELATOM™ MN-53, and that CELATOM™ MN-51 may be particularly effective for the control of insects, or more particularly for the control of bedbugs.

In another experiment on February 1, 2012, six Petri dishes (each about 5.0 cm or about 2.0 inches in diameter) were sprayed with an aerosol including CELATOM™ MN-51, and a thin coating of the CELATOM™ MN-51 remained after drying; those six Petri dishes were used for an experimental group. An additional six Petri dishes (each 5.0 cm or about 2.0 inches in diameter) did not receive the aerosol or the diatomaceous earth; those six Petri dishes were used for a control group. Five bedbugs were introduced into each of the 12 Petri dishes, and lids were applied to prevent the bedbugs from escaping. Mortality was assessed 3, 15, 18, and 24 hours after the bedbugs were introduced into the Petri dishes, and there was no mortality in the control group. Mortality in the experimental group is shown in Table 5 below.

**Table 5: Number of bedbugs dead from aerosol including CELATOM™ MN-51.**

Petri dish number	Number dead after 3 hours	Number dead after 15 hours	Number dead after 18 hours	Number dead after 24 hours
1	0	5	5	5
2	0	2	3	5
3	0	5	5	5
4	0	4	5	5
5	0	5	5	5
6	0	3	3	5
Total	0	24	26	30

Thus, in the February 1, 2012 experiment, all of the bedbugs exposed to the aerosol including CELATOM™ MN-51 died within 24 hours, whereas none of the control group bedbugs died within 24 hours.

Another experiment on February 12, 2012 involved plastic RUBBERMAID™ translucent boxes (about 73.6 cm × about 45.7 cm × about 33.7 cm, or about 29 inches × about 18 inches × about 13.3 inches), more particularly two such boxes as experimental boxes and two such boxes as control boxes. A section about 20 cm (or about 7.9 inches) wide in the center of each of the experimental boxes was sprayed with the aerosol including CELATOM™ MN-51 and allowed to dry. A piece of a field-collected sheet (about 50 cm × about 24 cm, or about 19.7 inches × about 7.9 inches) was lined on one side of each of the boxes and used as a stimulant. The sheet was collected from a home infested with bedbugs, and had eggs and many freshly fed bedbugs, but the bedbugs were collected from the sheet before

placing pieces of the sheet into the boxes. Sides of the boxes opposite the pieces of the field-collected sheet were lined with a clean and new piece of cloth. Fifty adult bedbugs were introduced into each box on the clean cloth, and then the box was closed with a lid. The control boxes were similar to the experimental boxes but  
5 did not include the aerosol.

In all four of the boxes, the bedbugs moved from the sides of the boxes having the clean cloths to the sides of the boxes having the pieces of the field-collected sheet. There was no mortality in the control boxes after 48 hours, but after 24 hours, one of the experimental boxes had mortality of 43 of the 50 bedbugs, and the other of  
10 the experimental boxes had mortality of 45 of the 50 bedbugs. All of the bedbugs in the experimental boxes died after 48 hours. The bedbugs were found dead lying on their backs and dusted with the product from the aerosol. Therefore, it is believed that even a brief exposure as bedbugs cross an area treated with CELATOM™ MN-51 is sufficient to cause high mortality in the bedbugs.

15 It is also believed that when one bedbug contacts diatomaceous earth, that bedbug may spread the diatomaceous earth to other bedbugs, and therefore causing one bedbug to contact diatomaceous earth may cause death of several bedbugs. For example, in one experiment, a bedbug was allowed to contact diatomaceous earth and a fluorescent dye directly, and that bedbug was allowed to contact several  
20 other bedbugs that had not been allowed to contact the diatomaceous earth directly. It was found that many of the bedbugs that had not been allowed to contact the diatomaceous earth directly died shortly after contacting the bedbug that did contact the diatomaceous earth directly. Also, the fluorescent dye was observed on the bedbugs that died shortly after contacting the bedbug that did  
25 contact the diatomaceous earth directly, suggesting that such bedbugs came into contact with diatomaceous earth by contacting the bedbug that had contacted the diatomaceous earth directly. Therefore, it is believed that causing one bedbug to contacted diatomaceous earth directly may in some cases cause the deaths of several bedbugs.

In another experiment on February 18, 2012, mortality of CELATOM™ MN-51 was compared with two commercially available insecticides, namely the insecticides known as ALPINE DUST™ and MOTHER EARTH™. The various products were weighed on a small filter paper, which was then placed in a Petri dish (about 5.0 cm or about 2 inches diameter). Bedbugs were introduced in the various Petri dishes, and mortality was assessed in each of the Petri dishes after 24 hours and after 48 hours. Four concentrations of each product were used, the concentrations ranging from 0.25 mg to 4 mg, and there were three replications of between 9 and 11 bedbugs in each replication. A probit analysis was used to calculate LC<sub>50</sub> and LC<sub>95</sub> (lowest lethal concentrations sufficient to kill 95% of the bedbugs) values and confidence intervals ("CIs") for the LC<sub>50</sub> and LC<sub>95</sub> values, as shown in Table 6 below.

**Table 6: LC<sub>50</sub>, LC<sub>95</sub>, and CI for CELATOM™ MN-51, ALPINE DUST™, and MOTHER EARTH™.**

Product	Time (hours)	LC <sub>50</sub>	CI of LC <sub>50</sub>	LC <sub>95</sub>	CI of LC <sub>95</sub>
CELATOM™ MN-51	24	0.24	0.14-0.32	0.95	0.69-1.98
ALPINE DUST™	24	6.36	3.83-29.27	52.57	15.88-3366
ALPINE DUST™	48	1.72	1.37-2.18	6.6	4.47-13.44
MOTHER EARTH™	24	0.26	0.14-0.36	1.37	0.91-3.44

The data in Table 6 show that CELATOM™ MN-51 required lower concentrations (specifically lower LC<sub>50</sub> and LC<sub>95</sub>, and lower CIs for those values) than ALPINE DUST™ and MOTHER EARTH™ in that experiment, and therefore it is believed

that CELATOM™ MN-51 may generally be more effective than ALPINE DUST™ and MOTHER EARTH™ in controlling populations of bedbugs.

In general, it is believed that diatomaceous earth may damage exoskeletons of animals having exoskeletons, which damage may lead to dehydration and death of the animals. Therefore, it is believed that diatomaceous earth, and various apparatuses, kits, and systems such as those including diatomaceous earth as described herein, may be effective in the control of populations of one or more of animals having exoskeletons, arthropods, arachnids, insects, and bedbugs. Herein, “control” of an animal population may include prevention of growth or survival of such a population before discovery of the population, and also killing one or more members of such a population after discovery of the population. Diatomaceous earth is also a natural product, and in general, natural products may be preferable over other pest control products because natural products may be less harmful to humans or more generally to the environment. Animals that may desirably be killed by diatomaceous earth also include cockroaches, ants, fleas, and other pests.

Although CELATOM™ MN-51 and CELATOM™ MN-53 and other products have been discussed above, some embodiments may include other types of diatomaceous earth, which may be supplied by other suppliers. In general, such diatomaceous earth in some embodiments may be heat-treated or flash dried diatomaceous earth, such as diatomaceous earth flash dried at about 480 °C for about 15 seconds for example, or may more generally be modified diatomaceous earth. More generally, such diatomaceous earth may have one or more properties similar to one or more of the properties of CELATOM™ MN-51 or CELATOM™ MN-53 listed in Tables 1 and 2 above in order to achieve effects that may be similar to the effects of CELATOM™ MN-51 or CELATOM™ MN-53 described above.

Further, other embodiments may include products other than diatomaceous earth that may be effective to control bedbug populations or more generally as an insecticide or pesticide. For example, United States Patent No. 8,101,408



describes various legume extracts, such as one or more of PA1b-related peptides, terpenoid saponins, triterpenoid saponin, soyasaponin I, soyasaponin II, soyasaponin III, soyasaponin VI, dehydrosoyasaponin I, echinocystic acid 3-glucoside, glycyrrhizic acid, hederacoside C, beta-escin, alpha-hederin, and other acetic acid precipitated insecticidal components. In various embodiments, one or both of diatomaceous earth and such legume extracts may be incorporated into thermoplastic bodies, for example by adding the diatomaceous earth, the legume extracts, or both to the thermoplastic material of the body when the thermoplastic material is in a liquid phase and before the thermoplastic material is injected into a mold.

Still referring to Figure 11, the decorative cover 102 and the body 106 may be manufactured to have the hook-and-loop connectors 138 and 154 in predetermined positions on the decorative cover 102 and on the body 106 respectively, and such predetermined positions may be determined to impart a desired position and tension of the decorative cover 102 over the padding 104. Therefore, the decorative cover 102 may be installed with such a desired position and tension simply by aligning the connector 138 with the connector 154. Therefore, in the embodiment shown, the connector 154 on the body 106 complementary to the connector 138 on the decorative cover 102 may simplify holding the decorative cover 102 on the body 106 because a desirable position of decorative cover 102 on the body 106 may be predetermined by the respective positions of the complementary connectors 138 and 154, which may eliminate a need to position a decorative cover carefully on a frame while connecting the decorative cover to the frame. Further, in some embodiments, there is no need to stretch or deform the decorative cover 102 when installing it on the body 106.

Still further, in the embodiment shown, the connectors 138 and 154 are continuous hook-and-loop connectors, and therefore may avoid unsightly looks that can result from connecting a decorative cover only at discrete points on a frame.

Referring to Figure 12, another illustrative body is shown generally at **300** and has a front side shown generally at **302** and having a front surface **304**. The front surface **304** includes a generally flat planar portion **306** and an inward-facing portion **308**. The body **300** also has a rear side shown generally at **310** opposite the front side **302**, and an outwardly facing lateral surface **312**. The inward facing portion **308** of the front surface **304** is therefore between the generally flat planar portion **306** and the lateral surface **312** of the body **300**. The body **300** is substantially similar to the body **106** discussed above, may similarly function as an apparatus for holding a decorative cover, and may include similar materials to the body **106**, although the inward-facing portion **308** includes a first portion **314** adjacent and extending generally perpendicular to the generally flat planar portion **306**, a second portion **316** adjacent the first portion **314** and extending non-parallel to the first portion **314** and away from the generally flat planar portion **306**, and a third portion **318** adjacent the second portion **316** and extending generally parallel to the first portion **314** and away from the generally flat planar portion **306**. Also, the lateral surface **312** in the embodiment shown includes a complementary portion **320** that is generally complementary to the inward-facing portion **308**.

Therefore, referring to Figure 13, the body **300** is stackable against an adjacent similar body **322** on the front side **302** of the body **300**, and against an adjacent similar body **324** on the rear side **310** of the body **300**. Thus, the complementary portion **320** of the lateral surface **312** of the adjacent similar body **322** contacts the inward-facing portion **308** of the body **300** when the adjacent similar body **322** is stacked against the front side **302** of the body **300**. Further, the complementary portion **320** of the lateral surface **312** of the body **300** contacts the inward-facing portion **308** of the adjacent similar body **324** when the adjacent similar body **324** is stacked against the rear side **310** of the body **300**.

Referring to Figures 14, 15, and 16, another illustrative body is shown generally at **326** and includes a front side shown generally at **328** and an opposite rear side shown generally at **330**. The front side **328** has a front surface **332** having a

perimeter **334**, and includes a generally flat planar portion **336** and an inward-facing portion **338**. The body **326** also includes an outwardly facing lateral surface **340** between the front surface **332** and a rear surface **342** on the rear side **330**. The body **326** defines a plurality of through-openings such as illustrative through-openings **344** and **346** for receiving respective fasteners as discussed above with the through-opening **172** shown in Figure **6**, for example. The through-openings such as the through-opening **344** and **346** also have respective cleats **348** and **350** that are substantially the same as the cleat **182** discussed above and shown in Figure **6**. On the rear side **330**, the body **326** defines projections **352**, **354**, and **356** having respective through-openings shown generally at **358**, **360**, and **362** for receiving respective projections **364**, **366**, and **368** of a wall-mountable cleat **370** that is substantially the same as the cleat **108** discussed above. The body **326** also defines, on the rear side **330**, projections **372**, **374**, and **376** having respective through-openings shown generally at **378**, **380**, and **382** for receiving the projections **368**, **366**, and **364** respectively of the cleat **370**. The body **326** is thus wall-mountable in a first orientation when the projections **364**, **366**, and **368** are received in the through-openings **358**, **360**, and **362** respectively, and in a second orientation perpendicular to the first orientation when the projections **364**, **366**, and **368** are received in the through-openings **382**, **380**, and **378** respectively. The spaced apart edges of the projections **364**, **366**, and **368** thus function as a connector, the spaced apart edges of the projections **356**, **354**, and **352** thus function as a connector complementary to the spaced apart edges of the projections **364**, **366**, and **368**, and the spaced apart edges of the projections **376**, **374**, and **372** also function as a connector complementary to the spaced apart edges of the projections **364**, **366**, and **368**.

The body **326** also has a connector **384** continuously adjacent the perimeter **334** of the front surface **332**, and in the embodiment shown the connector **384** is on the lateral surface **340**. The connector **384** is complementary to a connector such as the connector **138** on the decorative cover **102** shown in Figure **3**, and thus the body **326** also functions as an apparatus for holding a decorative cover.

The body **326** also defines additional through-openings such as illustrative through-openings **386** and **388**, which may reduce a weight and manufacturing cost of the body **326**. In the embodiment shown, the additional through-openings such as the through-openings **386** and **388** are generally rectangular and separated by generally linear members such as illustrative generally linear members **390** and **392**, which have through-openings such as the through-openings **344** and **346** and cleats such as the cleats **348** and **350**. However, in alternative embodiments, the through-openings such as the through-openings **386** and **388** may be omitted or closed by thin films of thermoplastic material (not shown) received against the front surface **332**.

The body **326** also has clips such as illustrative clips **394** and **396**, and such clips function as a light source connector for holding a light source (not shown), which may include a plurality of LED lights in a light string, for example. The clips such as the clips **394** and **396** are substantially the same as the clips such as the clips **264** and **266** shown in Figures **5** and **7** and discussed above.

Also, on the rear side **330**, the body **326** defines a storage compartment **398** for storing objects. In the embodiment shown, the storage compartment **398** includes a removable cover **400**. Again, in some embodiments, the storage compartment **398** may hold one or more of buttons, a needle, and thread to impart a textured appearance to the outer surface **112** of the decorative cover **102** as described above, for example.

The body **326** also includes additional projections **402**, **406**, **408**, and **410** on the rear surface **342** to contact at least a portion of an adjacent similar apparatus when the adjacent similar apparatus is stacked against the rear side **330** of the body **326**. The additional projections **402**, **406**, **408**, and **410** in some embodiments may thus impart greater stability to a system of stacked similar bodies. The body **326**, and other bodies and cleats such as those disclosed herein, may be made from materials such as those discussed above for the body **106**.

Referring to Figure 25, another illustrative embodiment is shown generally at **474** and is similar to the body **326** shown in Figures 14, 15, and 16, except that on a rear side **476** of the body **474**, the body **474** defines receptacles **478**, **480**, **482**, and **484**. In the embodiment shown, the receptacles **478** and **480** receive a support **486**, and the receptacles **482** and **484** receive a support **488**. When the support **486** is received fully in the receptacles **478** and **480**, an exposed end shown generally at **490** of the support **486** has a plurality of through-openings **492** for receiving fasteners (not shown) to attach the support **490** to a bed frame (not shown). Likewise, when the support **488** is fully received in the receptacles **482** and **484**, an exposed end shown generally at **494** of the support **488** defines a plurality of through-openings **496** for receiving fasteners (not shown) for attaching the support **488** to the bed frame (not shown). The receptacles **478**, **480**, **482**, and **484** thus function as a connector for connecting the body **474** to a bed frame.

Referring to Figures 17, 18, and 19, another illustrative body is shown generally at **412** and is similar to the body **326** except that on a rear side **414** of the body **412**, the body **412** includes a plurality of structural reinforcing ribs such as illustrative structural reinforcing ribs **416** and **418**.

The body **412** in the embodiment shown is substantially thermoplastic and may be formed in a mold. Such molds are costly to produce, and therefore such molds are preferably adjustable in size to produce bodies similar to the body **412** but having different dimensions. For example, referring to Figure 17, the line **420** divides the body **412** into portions **422** and **424** that may be formed by respective separate portions of a mold. Those portions of the mold may be separated, and an additional portion of the mold may be inserted therebetween to form a body similar to the body **412** but larger by having an additional portion (not shown) between the portions **422** and **424**.

In the embodiment shown, the body **412** has a height **426** of about 109.2 cm (or about 43 inches), and a width **428** of about 147.3 cm (or about 58 inches). Such dimensions may be suitable for a headboard for a North American double-sized

bed having a width of about 137.2 cm (or about 54 inches). However, in North America, a queen-sized bed having a width of about 152 cm (or about 60 inches) is also common, and therefore a body suitable for use as a headboard for a North American queen-sized bed may have a width of about 162.6 cm (or about 64 inches) by expanding the mold by inserting a mold expansion portion into the mold, the mold expansion portion having a width of about 15.3 cm (or about 6 inches) to cause an additional portion having a width of about 15.3 cm (or about 6 inches) to be formed in the body **412** between the portions **422** and **424**. Also, some North American king-size beds have a width of about 203.2 cm (or about 80 inches), and therefore two bodies **412** may be rotated by 90° and positioned adjacent each other to have a common width of about 218.4 cm (or about 86 inches, namely about twice the height **426**) and to have a common height of about 147.3 cm (or about 58 inches, namely about equal to the width **428**). Therefore, with a mold expansion portion to form an additional portion between the portions **422** and **424**, a single mold may produce bodies suitable for headboards of three different sizes of beds, such as North American double-, queen-, and king-sized beds for example.

In alternative embodiments, a body may include telescoping portions to permit adjustment of an overall size of the body.

- Referring to Figure **20**, another illustrative body is shown generally at **430** and is similar to the body **412** except that the body **430** includes additional generally linear members **432** and **434** for additional structural strength. The body **430** also may function as an apparatus for holding a decorative cover similar to the bodies **106**, **300**, **326**, and **412**, and may include similar materials as described above.
- Referring to Figure **21**, another illustrative body is shown generally at **436**. The body **436** may function as an apparatus for holding a decorative cover similar to the bodies **106**, **300**, **326**, **412**, and **430**, and may include similar materials as described above. The body **436** has a rear side shown generally at **438** and having a rear surface **440**. The body **436** defines through-openings generally at **442**, **444**,

and **446** for receiving fasteners similar to the through-opening **172** discussed above and shown in Figure **6**, for example.

The body **436** also defines through-openings **448** and **450**. The through-opening **448** is adjacent a bevelled edge **452**, and the through-opening **450** is adjacent a bevelled edge **454**. The bevelled edges **452** and **454** are connectors complementary to a French cleat to mount the body **436** on a wall (such as the wall **88** shown in Figure **1**).

Referring to Figure **22**, an illustrative French cleat is shown generally at **456** and includes a bevelled edge **458** for contacting one of the bevelled edges **452** and **454** on the body **436** shown in Figure **21**. The bevelled edge **458** of the French cleat **456** thus also functions as a connector. The French cleat **456** also has through-openings shown generally at **460** and **462** for receiving fasteners (not shown) for mounting the French cleat **456** on a wall (such as the wall **88** shown in Figure **1**). The French cleat **456** is thus wall-mountable. The French cleat **456** also includes an inclination measuring device **464**, which in the embodiment shown is a bubble level to facilitate mounting the French cleat **456** on a wall (such as the wall **88** shown in Figure **1**) such that the bevelled edge **458** is level.

Referring to Figure **23**, the body **436** is shown with the bevelled edge **454** of the body **436** nearly in contact with the bevelled edge **458** of the French cleat **456**. When the body **436** is lowered relative to the French cleat **456** such that the bevelled edge **454** of the body **436** contacts the bevelled edge **458** of the French cleat **456**, the body **436** is supported by the French cleat **456** and thus mounted on the wall. In the embodiment shown, the bevelled edge **454** is longer than the bevelled edge **458**, and therefore the body **436** in some embodiments can be moved relative to the French cleat **456** to position the body **436** in a desired position, such as at the head of a bed, for example.

Referring to Figure **24**, an adjacent similar body **466** is stackable against a front side **468** of the body **436**, and a similar adjacent body **470** is stackable against the rear side **438** of the body **436**.

The embodiments described above are substantially rectangular, but one skilled in the art will appreciate that other embodiments may have non-rectangular shapes. As illustrative examples, Figure **26** illustrates a headboard **498** having a shape that may be referred to as an “arched” shape, Figure **27** illustrates a headboard **500** having a shape that may be referred to as a “camel back” shape, and Figure **28** illustrates a headboard **502** having a generally rectangular shape with rounded upper corners. It will be appreciated that embodiments such as those illustrated in Figures **2** to **25** may alternatively have shapes such as those illustrated in Figures **26** to **28**, for example.

As indicated above, the bodies disclosed above may form part of headboard systems that hold decorative covers without requiring conventional upholstery techniques and without requiring other more cumbersome alternatives to upholstery. Further, the bodies discussed above may be used to hold decorative covers for applications other than headboards, such as decorating walls more generally, for example. Still further, the bodies discussed above may be stacked as shown in the drawings, for example, and such stacking may permit compact and cost-effective shipping while the contact between adjacent similar bodies stabilizes the bodies during shipping, which may reduce damage during shipping that may be caused from relative movement of adjacent bodies. Further, light sources such as those disclosed above may enhance the visual appearance of walls to which the bodies disclosed above are mounted.

Referring back to Figure **1**, the nightstand **92** includes legs **504**, **506**, **508**, and **510** for contacting the floor **86**. The nightstand **92** also includes a generally rectangular frame **512** supported by the legs **504**, **506**, **508**, and **510** over the floor **86**, and the nightstand **92** also includes a drawer **514** slidably receivable in the generally rectangular frame **512**. In various embodiments, one or more of the legs **504**, **506**,



**508**, and **510**, the generally rectangular frame **512**, and the drawer **514** are substantially thermoplastic bodies of the nightstand, which is a furniture apparatus. One or more of such substantially thermoplastic bodies may be formed in a mold, and in some embodiments, carbon plastic may be desirable because of durability,  
5 a polished finish, and various colours that may be available with carbon plastic.

Still further, one or more of such substantially thermoplastic bodies may include incorporated therein one or more of the diatomaceous earth products and legume extracts discussed above. As with the other embodiments discussed, above, such diatomaceous earth, legume extracts, or both may be incorporated into such  
10 substantially thermoplastic bodies by adding the diatomaceous earth, the legume extracts, or both to the thermoplastic material when the thermoplastic material is in a liquid phase before the thermoplastic material is injected into a mold. In one embodiment, about 30% by weight of such substantially thermoplastic bodies may be diatomaceous earth or a mixture of diatomaceous earth and one or more  
15 legume extracts. Further, additional diatomaceous earth, legume extracts, or both may be adhered to inner surfaces of such substantially thermoplastic bodies, such as inner surfaces of the generally rectangular frame **512** or the drawer **514** for example, for further exposure of the diatomaceous earth to animals such as bedbugs.

20 In alternative embodiments, the generally rectangular frame **512** and the drawer **514** may be replaced by a table surface platform supported by legs similar to the legs **504**, **506**, **508**, and **510**. According to such an embodiment, a furniture apparatus may include a table including substantially thermoplastic bodies and one or both of diatomaceous earth and legume extracts as described above.

25 Still referring to Figure 1, the dresser **94** includes a generally rectangular frame **516** and a plurality of drawers, such as the drawers **518** and **520**, slidably receivable in the generally rectangular frame **516**. The generally rectangular frame **516** and the plurality of drawers slidably receivable therein may be substantially the same as the generally rectangular frame **512** and the drawer **514** described above.

The bed **96** includes a generally rectangular platform **522** for supporting the mattress **98**. The bed **96** also includes four substantially thermoplastic bodies at respective corners of the generally rectangular platform **522**, and such substantially thermoplastic bodies **524**, **526**, and **528** are shown in Figure 1. Such substantially thermoplastic bodies in the embodiment shown are generally cylindrical, and act as supports for contacting the floor **86** and for supporting the generally rectangular platform **522** and thus the mattress **98** above the floor **86**. In alternative embodiments, the bed **96** may include more or fewer substantially thermoplastic bodies acting as such supports.

As indicated above, in some embodiments, carbon plastic may be a desirable material for some furniture apparatuses because carbon plastic may be coloured with a desired colour, and externally visible surfaces of the carbon plastic may be polished to reveal the desired colour with a durable and attractive polished finish. Further, in some embodiments, one or more internal surfaces (such as internal surfaces of the generally rectangular frames **512** and **516** shown in Figure 1, for example, which may be visible when drawers are removed from the generally rectangular frames but otherwise visibly concealed by the drawers) may be darkly coloured, such as coloured black or another dark colour. Thus, when diatomaceous earth, for example, is applied to such internal surfaces, the lighter colour of the diatomaceous earth may make the diatomaceous earth more easily visible on such surfaces, and may facilitate noticing an absence of such products on such surfaces. Therefore, such darkly coloured internal surfaces in some embodiments may assist with visibly determining whether such internal surfaces have been sprayed or otherwise treated with diatomaceous earth or another more lightly coloured product, and such visual determinations may facilitate determining where and when such diatomaceous earth or other products should be applied to ensure a desired amount of such diatomaceous earth or other products on various furniture apparatuses.

Although the nightstand **92**, the dresser **94**, the bed **96**, the mattress **98**, and the headboard system **100** are described above, various furniture apparatuses, kits, and systems according to alternative embodiments may include one or more substantially thermoplastic bodies including diatomaceous earth, legume extracts, or both incorporated therein, and such furniture apparatuses according to some  
5       embodiments may assist in the control of bedbug and other animal populations. Therefore, commercial use of such apparatuses, kits, and systems may involve distributing, selling, offering for sale, or placing such apparatuses, kits, and systems in bedrooms or hotel rooms in an effort to control populations of animals,  
10       such as animals having exoskeletons, arthropods, arachnids, insects, and *Cimex lectularius* for example, in such bedrooms or hotel rooms.

Further, it is believed that bedbugs are often introduced into a bedroom or hotel room from occupants of the bedroom or hotel room, or from the belongings of the occupants of the bedroom or hotel room. It is also believed that such occupants  
15       and belongings are likely to be on one or more of a bed, nightstand, and dresser in the bedroom or hotel room, and therefore that bedbugs are likely to be introduced into the bedroom or hotel room in one or more of a bed, nightstand, and dresser in the bedroom or hotel room. It is also believed that bedbugs are likely to dwell in a bed in the bedroom or hotel room. Therefore, in some embodiments, the nightstand  
20       **92**, the dresser **94**, the bed **96**, and the headboard system **100** may cooperate with each other and collectively facilitate control of bedbugs by controlling bedbugs in particular locations where bedbugs may be introduced or may likely dwell into the bedroom or hotel room.

Although specific embodiments have been described and illustrated, such  
25       embodiments should be considered illustrative of the invention only and not as limiting the invention as construed according to the accompanying claims.

**What is claimed is:**

1. An apparatus for holding a decorative cover, the apparatus comprising:  
  
a body having front and rear opposite sides, the front side of the body having a front surface having a perimeter, the rear side of the body having a rear surface, and the body having an outwardly facing lateral surface between the front and rear surfaces; and  
  
a first connector on the body, the first connector detachably connectable, continuously adjacent at least a portion of the perimeter of the front surface, to a second connector, complementary to the first connector, on the decorative cover.
2. The apparatus of claim 1 wherein the first connector is on the lateral surface.
3. The apparatus of claim 1 or 2 wherein the first connector comprises a hook side of a hook-and-loop connector.
4. The apparatus of claim 1 or 2 wherein the first connector comprises a loop side of a hook-and-loop connector.
5. The apparatus of any one of claims 1 to 4 wherein the first connector extends adjacent at least a majority of the perimeter of the front surface.
6. The apparatus of any one of claims 1 to 4 wherein the first connector extends adjacent substantially the entire perimeter of the front surface.
7. The apparatus of any one of claims 1 to 6 further comprising a third connector for mounting the apparatus on a wall.
8. The apparatus of claim 7 wherein the third connector comprises a first edge on the rear side of the body for coupling with a complementary edge on a fourth connector mounted to the wall.

9. The apparatus of claim **8** wherein the third connector comprises a first plurality of spaced apart edges on the rear side of the body for coupling with respective complementary edges on the fourth connector.
- 5 10. The apparatus of claim **8** or **9** further comprising a fifth connector for mounting the apparatus on a wall, the fifth connector comprising a second edge on the rear side of the body for coupling with the complementary edge on the fourth connector, the second edge extending non-parallel to the first edge.
- 10 11. The apparatus of claim **10** wherein the second edge extends perpendicular to the first edge.
12. The apparatus of claim **10** or **11**, when dependent on claim **9**, wherein the fifth connector comprises a second plurality of spaced apart edges on the rear side of the body for coupling with the respective complementary edges on the fourth connector.
- 15 13. The apparatus of any one of claims **1** to **6** further comprising a bed frame connector for connecting the body to a bed frame.
14. The apparatus of claim **13** wherein the bed frame connector comprises at least one receptacle defined by the body for receiving at least one respective support attachable to the bed frame.
- 20 15. The apparatus of any one of claims **1** to **14** further comprising a light source connector for connecting a light source proximate the lateral surface.
16. The apparatus of claim **15** wherein the light source comprises a plurality of lights in a light string, and wherein the light source connector comprises a plurality of clips for holding the light string proximate the lateral surface.
- 25 17. The apparatus of claim **15** or **16** wherein the lateral surface of the body comprises a translucent portion for transmitting light from the light source.

18. The apparatus of claim **15** or **16** further comprising a translucent cover connectable to the lateral surface of the body for covering the light source.
19. The apparatus of any one of claims **1** to **18** wherein the body defines a storage compartment on the rear side of the body for storing objects.
- 5 20. The apparatus of any one of claims **1** to **19** further comprising an inclination measuring device for measuring inclination of the body.
21. The apparatus of claim **20** wherein the inclination measuring device comprises a bubble level.
- 10 22. The apparatus of any one of claims **1** to **21** wherein the front surface defines a recess for receiving padding between the body and the decorative cover.
23. The apparatus of claim **22** wherein the body defines a plurality of through-openings extending between the front and rear surfaces, the through-openings for receiving respective fasteners receivable through the padding and through the decorative cover to compress the padding in respective regions surrounding the respective fasteners.
- 15 24. The apparatus of claim **22** or **23** wherein:
- the front surface comprises a generally flat planar portion and an inward-facing portion between the generally flat planar portion and the lateral surface of the body; and
- 20                   the generally flat planar portion of the front surface and the inward-facing portion of the front surface define the recess.
25. The apparatus of claim **24** wherein an adjacent similar apparatus is stackable against the rear side of the body.

26. The apparatus of claim **24** wherein:

the body defines a first projection having the lateral surface and the inward-facing portion of the front surface; and

5 at least a portion of the lateral surface is positioned to contact at least a portion of the inward-facing portion of the front surface of an adjacent similar apparatus such that the adjacent similar apparatus is stackable against the rear side of the body when the at least the portion of the lateral surface contacts the at least the portion of the inward-facing portion of the front surface of the adjacent similar  
10 apparatus.

27. The apparatus of claim **25** or **26** wherein the body defines, on the rear surface, at least one additional projection configured to contact the adjacent similar apparatus when the adjacent similar apparatus is stacked against the rear side of the body.

15 28. The apparatus of any one of claims **1** to **27** wherein the body is substantially thermoplastic.

29. The apparatus of claim **28** wherein the body comprises carbon plastic.

30. The apparatus of claim **28** or **29** wherein the body comprises a PA1b-related peptide incorporated in the body.

20 31. The apparatus of claim **30** wherein the body further comprises saponin incorporated in the body.

32. The apparatus of claim **28**, **29**, **30**, or **31** wherein the body comprises diatomaceous earth incorporated in the body.

25 33. The apparatus of claim **32** wherein the diatomaceous earth is about 30% by weight of the body.

**34.** A kit comprising:

the apparatus of any one of claims **1** to **33**; and

the decorative cover.

**35.** A kit comprising:

5 the apparatus of any one of claims **22** to **27**, or of any one of claims **28** to **33** when dependent on claim **22**;

the padding; and

the decorative cover.

**36.** A system comprising:

10 the apparatus of any one of claims **1** to **33**; and

the decorative cover;

wherein the first connector is connected to the second connector such that the decorative cover covers at least a portion of the front surface of the body surrounded by the perimeter of the front surface of the body.

15

**37.** A system comprising:

the apparatus of any one of claims **22** to **27**, or of any one of claims **28** to **33** when dependent on claim **22**;

the padding; and

20 the decorative cover;

wherein the first connector is connected to the second connector such that the decorative cover covers at least a portion of the front surface of the body surrounded by the perimeter of the front surface



of the body, and such that the decorative cover holds the padding between the body and the decorative cover and in the recess for receiving padding.

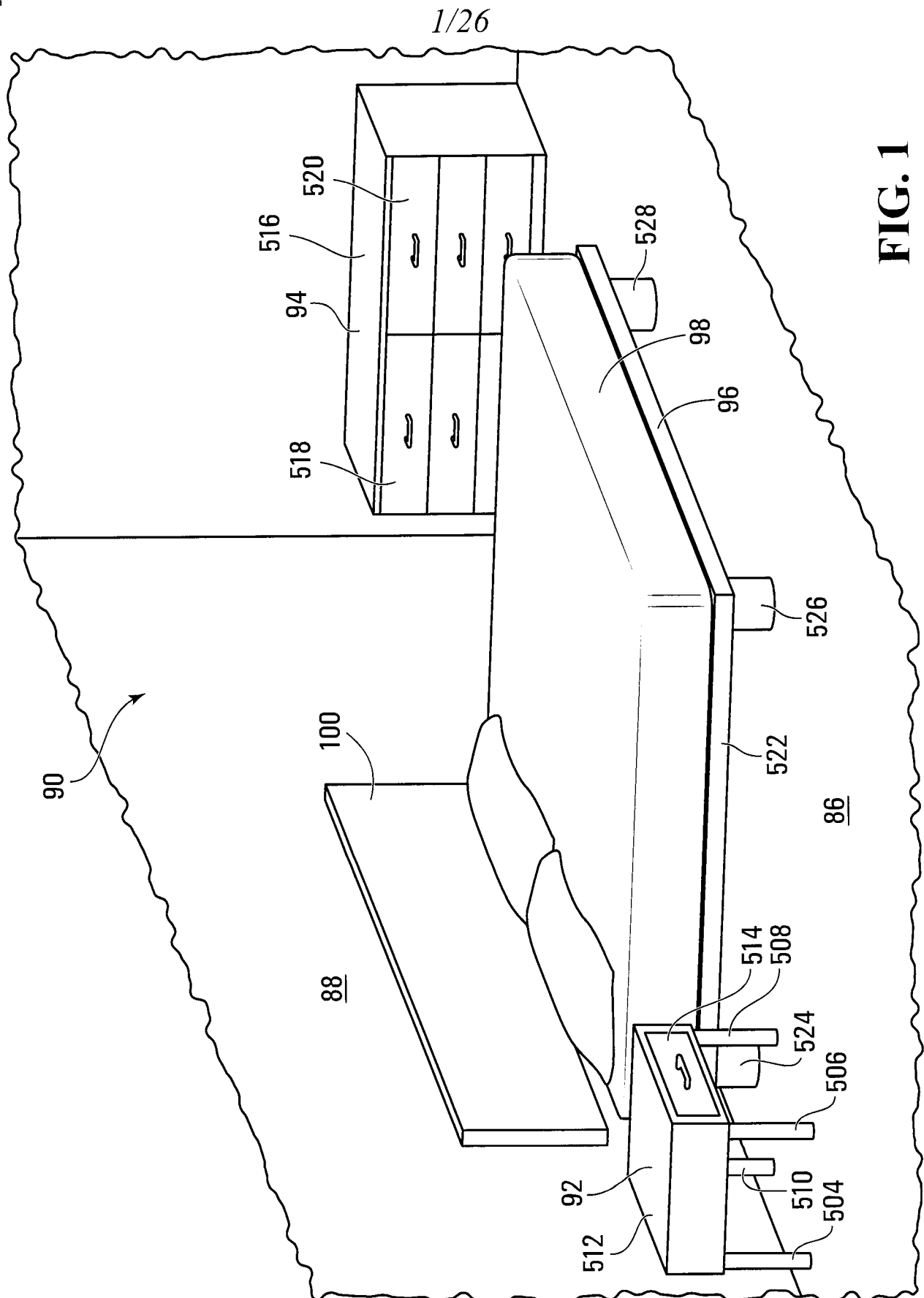
- 5       **38.** A headboard apparatus comprising a substantially thermoplastic body having a holder for holding a decorative cover.
- 39.** The apparatus of claim **38** wherein the body comprises carbon plastic.
- 40.** A furniture apparatus comprising at least one substantially thermoplastic body and a PA1b-related peptide incorporated in one or more of the at least one body.
- 10   **41.** The furniture apparatus of claim **40** wherein the body further comprises saponin incorporated in the body.
- 42.** The furniture apparatus of claim **40** or **41** wherein the body further comprises diatomaceous earth incorporated in the body.
- 15   **43.** A furniture apparatus comprising at least one substantially thermoplastic body and diatomaceous earth incorporated in one or more of the at least one body.
- 44.** The apparatus of claim **42** or **43** wherein the diatomaceous earth is about 30% by weight of the one or more of the at least one body.
- 20   **45.** The apparatus of any one of claims **40** to **44** wherein the at least one body comprises carbon plastic.
- 46.** The apparatus of any one of claims **40** to **44** wherein the furniture apparatus comprises an apparatus for holding a decorative cover.
- 47.** The apparatus of any one of claims **40** to **44** wherein the furniture apparatus comprises a bed.

- 48.** The apparatus of claim **47** wherein the at least one substantially thermoplastic body comprises at least one support for contacting a floor of a room, and wherein the bed comprises a platform supportable by the at least one support and configured to support a mattress on the platform.
- 5 **49.** The apparatus of any one of claims **40** to **44** wherein the furniture apparatus comprises a table.
- 50.** The apparatus of claim **49** wherein the at least one substantially thermoplastic body comprises at least one support for contacting a floor of a room, and wherein the table comprises a platform supportable by the at least one support.
- 10 **51.** The apparatus of any one of claims **40** to **44** wherein the furniture apparatus comprises a dresser.
- 52.** The apparatus of any one of claims **40** to **44** wherein the article of furniture comprises a nightstand.
- 15 **53.** The apparatus of claim **32**, **33**, **42**, **43**, or **44**, or of any one of claims **45** to **52** when dependent on claim **42** or **43**, wherein the diatomaceous earth comprises CELATOM™ MN-51.
- 54.** The apparatus of claim **32**, **33**, **42**, **43**, or **44**, or of any one of claims **45** to **53** when dependent on claim **42** or **43**, wherein the diatomaceous earth has a median particle diameter of about 15 microns.
- 20 **55.** The apparatus of claim **32**, **33**, **42**, **43**, or **44**, or of any one of claims **45** to **53** when dependent on claim **42** or **43**, wherein the diatomaceous earth has a median particle diameter of more than about 14 microns.
- 56.** The apparatus of claim **32**, **33**, **42**, **43**, or **44**, or of any one of claims **45** to **55** when dependent on claim **42** or **43**, wherein the diatomaceous earth is about 5.6% CaO.
- 25

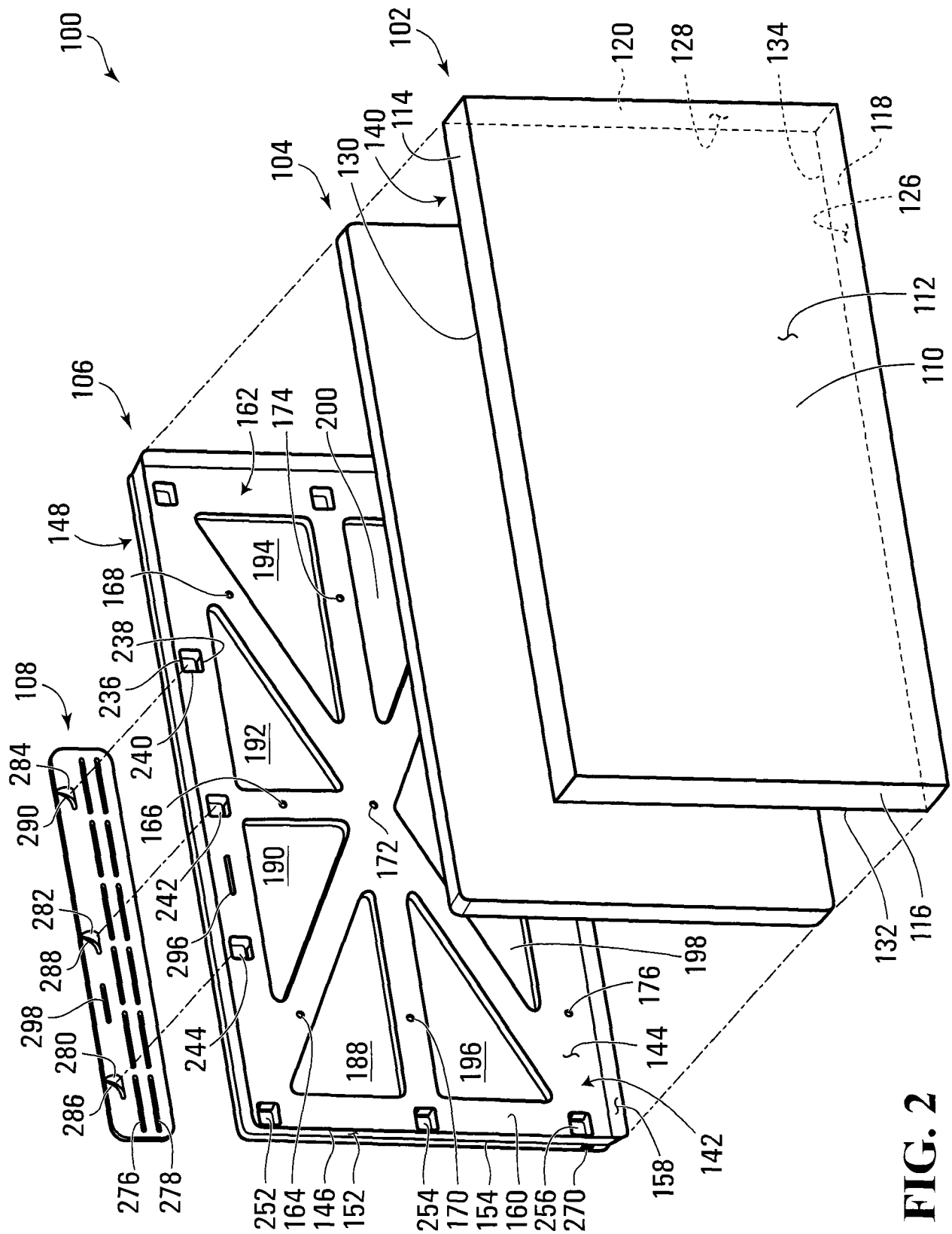
57. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 55** when dependent on claim **42 or 43**, wherein the diatomaceous earth comprises more than about 0.9% CaO.
58. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 57** when dependent on claim **42 or 43**, wherein the diatomaceous earth is about 7.8% Al<sub>2</sub>O<sub>3</sub>.
59. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 57** when dependent on claim **42 or 43**, wherein the diatomaceous earth comprises more than about 5.6% Al<sub>2</sub>O<sub>3</sub>.
60. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 59** when dependent on claim **42 or 43**, wherein the diatomaceous earth has a pH of about 7.5 in a 10% slurry.
61. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 59** when dependent on claim **42 or 43**, wherein the diatomaceous earth has a pH of more than about 7.0 in a 10% slurry.
62. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 61** when dependent on claim **42 or 43**, wherein the diatomaceous earth is about 73.6% SiO<sub>2</sub>.
63. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 61** when dependent on claim **42 or 43**, wherein the diatomaceous earth is less than about 83.7% SiO<sub>2</sub>.
64. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 63** when dependent on claim **42 or 43**, wherein the diatomaceous earth is about 1.8% Fe<sub>2</sub>O<sub>3</sub>.

65. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 63** when dependent on claim **42 or 43**, wherein the diatomaceous earth is less than about 2.3%  $\text{Fe}_2\text{O}_3$ .
- 5 66. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 65** when dependent on claim **42 or 43**, wherein the diatomaceous earth comprises less than about 5.0%  $\text{H}_2\text{O}$  by weight.
67. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 65** when dependent on claim **42 or 43**, wherein the diatomaceous earth is about 3.0%  $\text{H}_2\text{O}$  by weight.
- 10 68. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 67** when dependent on claim **42 or 43**, wherein the diatomaceous earth absorbs water in an amount of about 165% by weight.
- 15 69. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 68** when dependent on claim **42 or 43**, wherein the diatomaceous earth is about 0.3%  $\text{MgO}$ .
70. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 69** when dependent on claim **42 or 43**, wherein the diatomaceous earth is heat-treated.
- 20 71. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 69** when dependent on claim **42 or 43**, wherein the diatomaceous earth is flash dried.
72. The apparatus of claim **32, 33, 42, 43, or 44**, or of any one of claims **45 to 69** when dependent on claim **42 or 43**, wherein the diatomaceous earth is flash dried at about 480 °C.

73. Use of the apparatus of any one of claims **1** to **33** and **38** to **72**, the kit of claim **34** or **35**, or the system of claim **36** or **37** to control a population of animals having exoskeletons.
- 5 74. Use of the apparatus of any one of claims **1** to **33** and **38** to **72**, the kit of claim **34** or **35**, or the system of claim **36** or **37** to control a population of arthropods.
75. Use of the apparatus of any one of claims **1** to **33** and **38** to **72**, the kit of claim **34** or **35**, or the system of claim **36** or **37** to control a population of arachnids.
- 10 76. Use of the apparatus of any one of claims **1** to **33** and **38** to **72**, the kit of claim **34** or **35**, or the system of claim **36** or **37** to control a population of insects.
- 15 77. Use of the apparatus of any one of claims **1** to **33** and **38** to **72**, the kit of claim **34** or **35**, or the system of claim **36** or **37** to control a population of *Cimex lectularius*.



**FIG. 1**



**FIG. 2**

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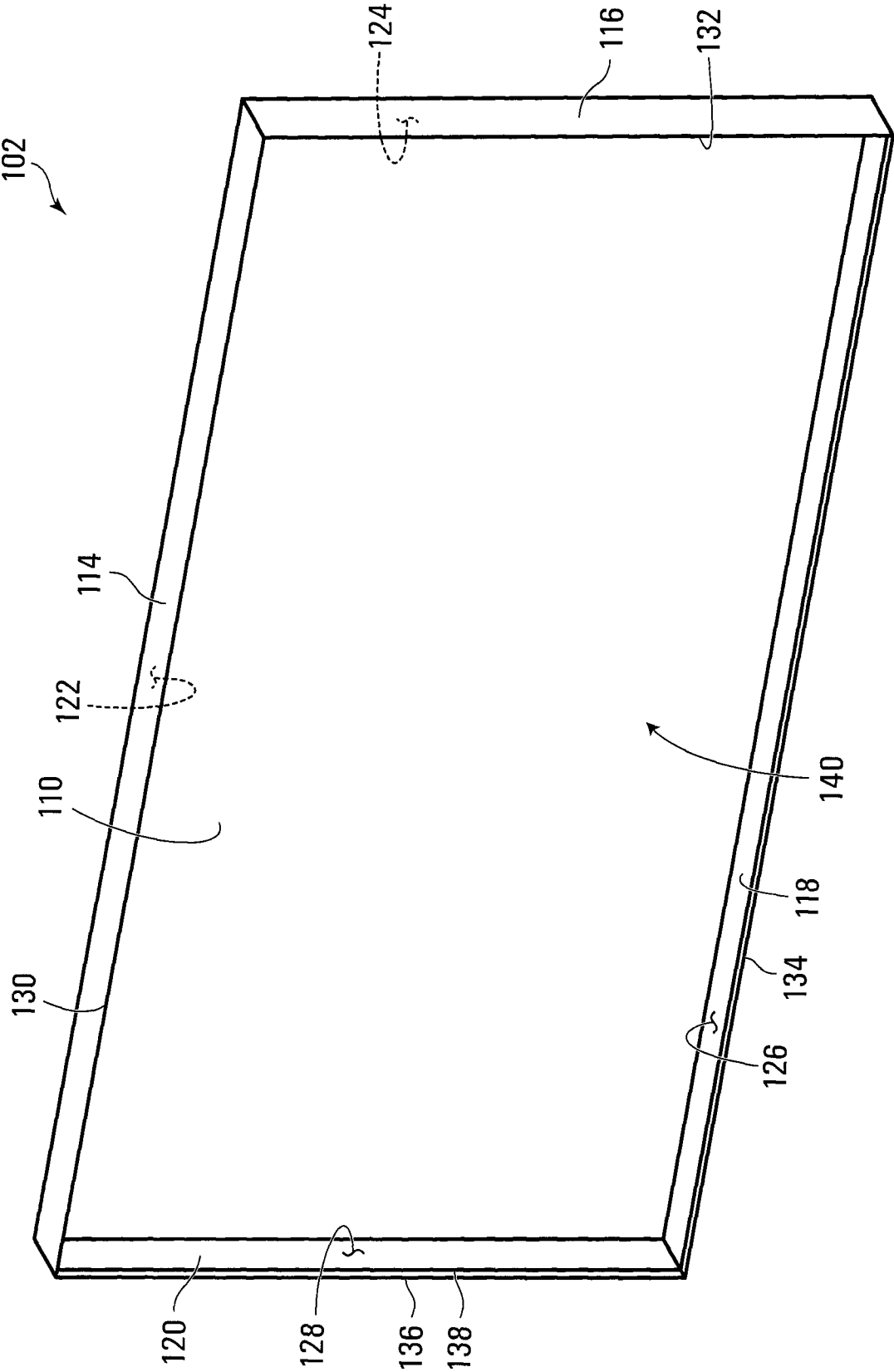
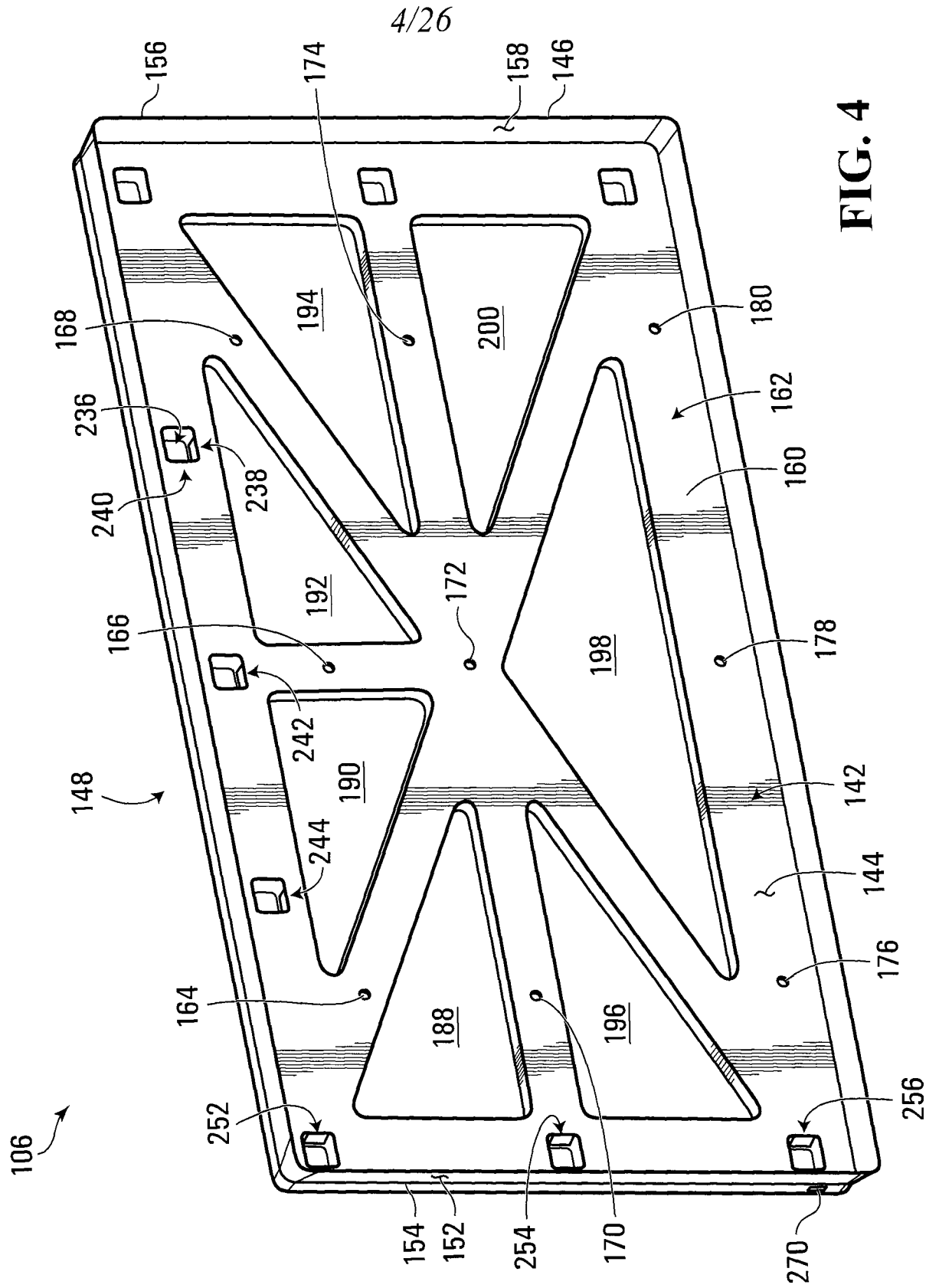


FIG. 3





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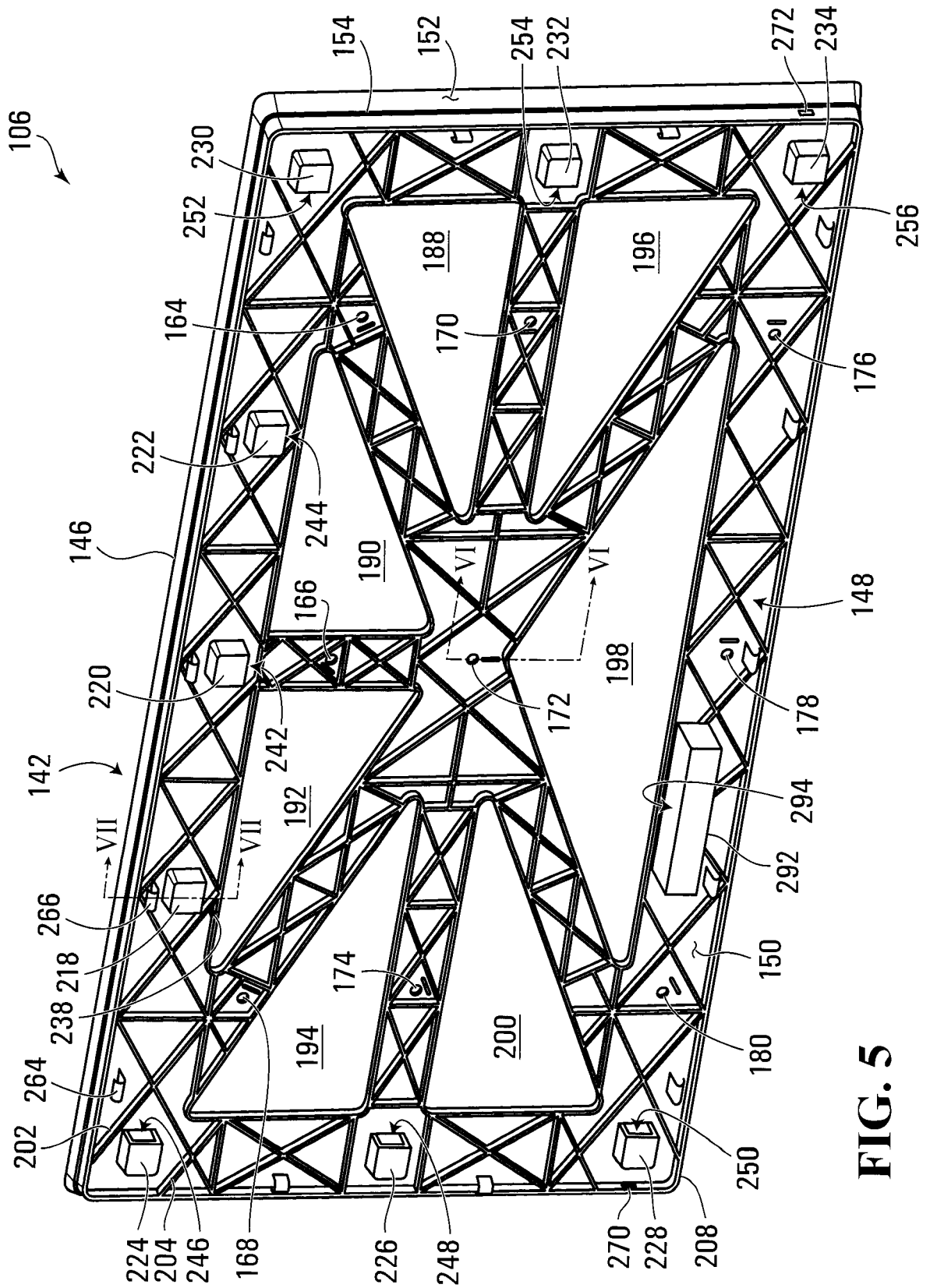


FIG. 5

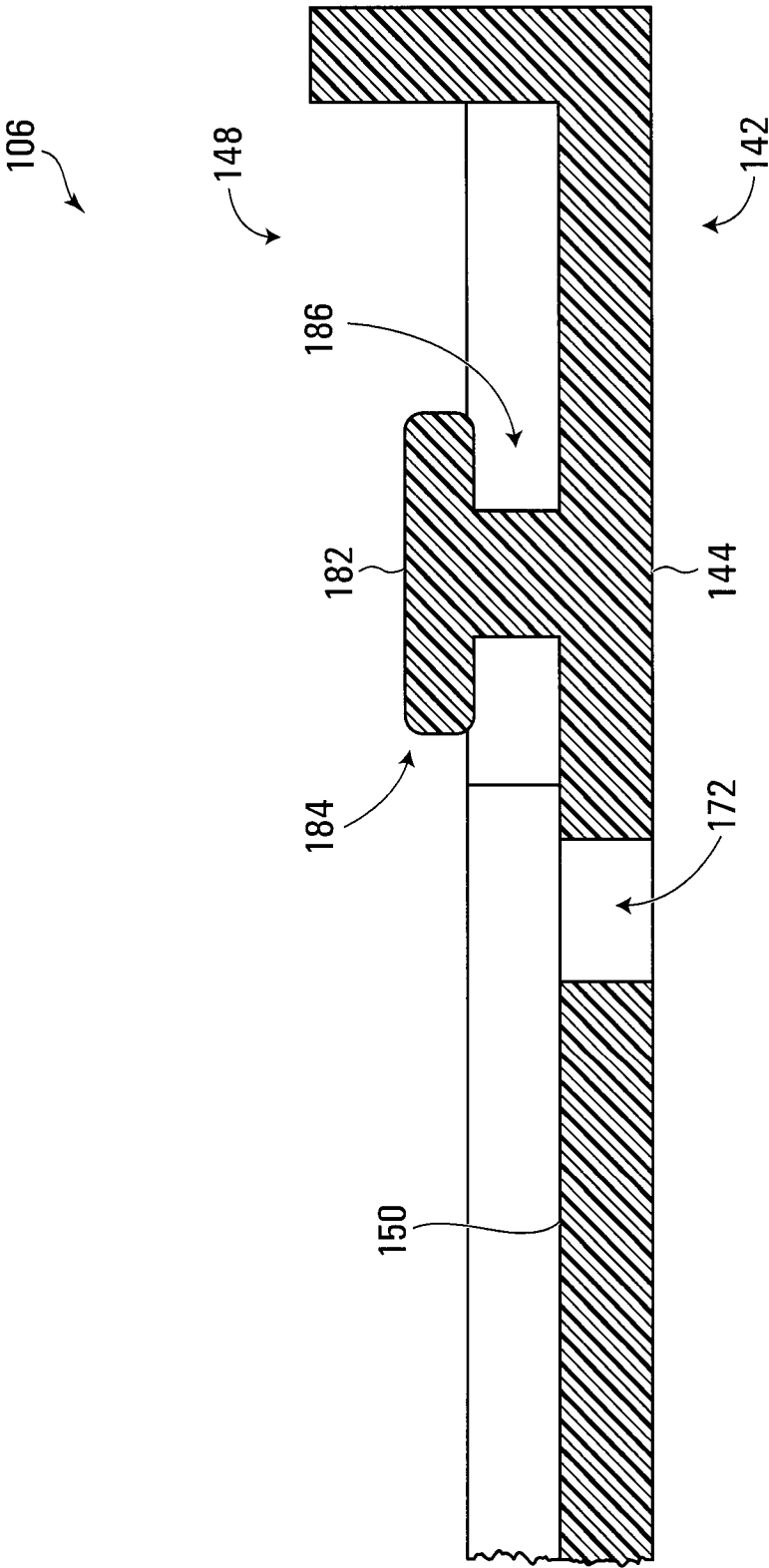


FIG. 6

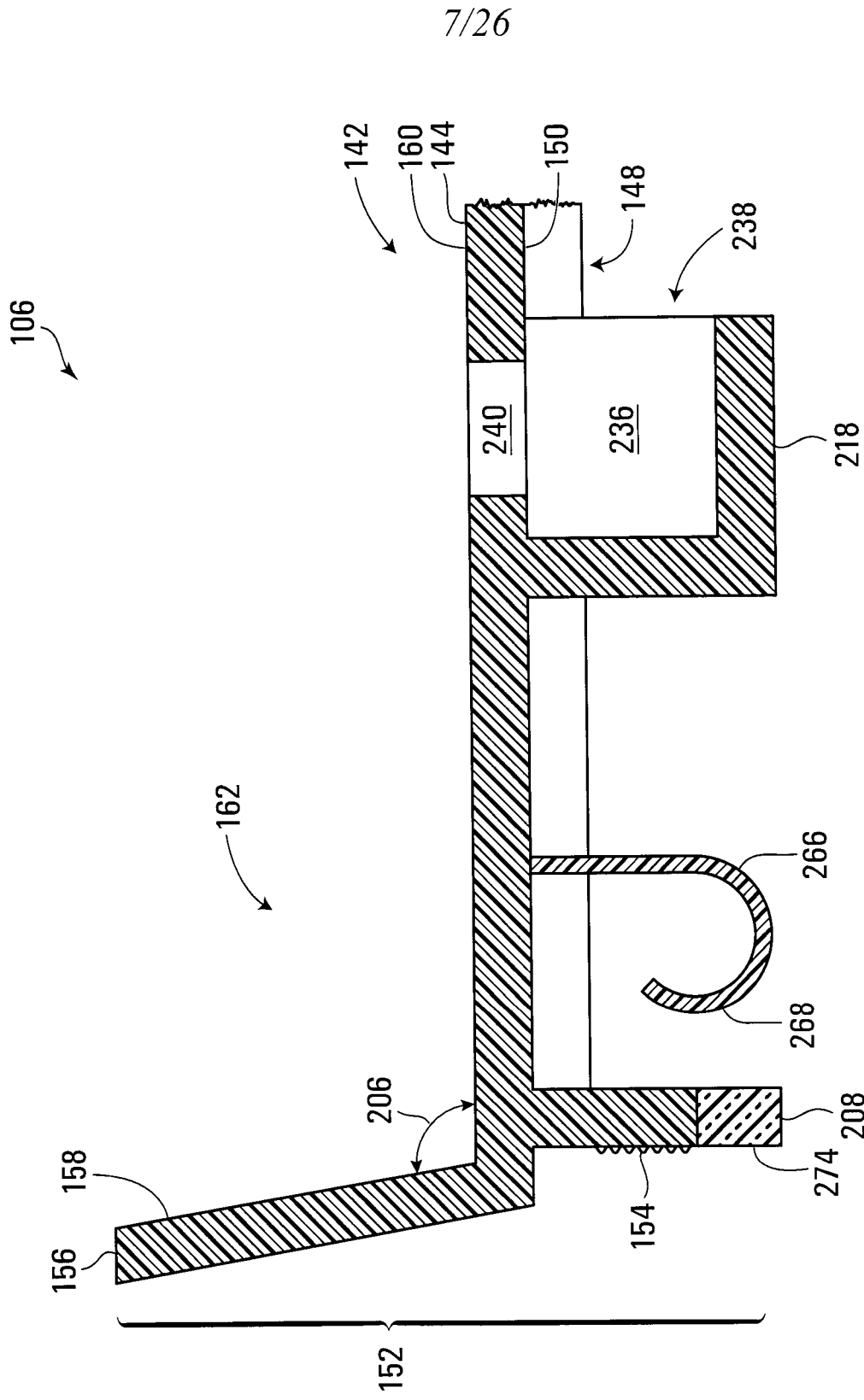


FIG. 7

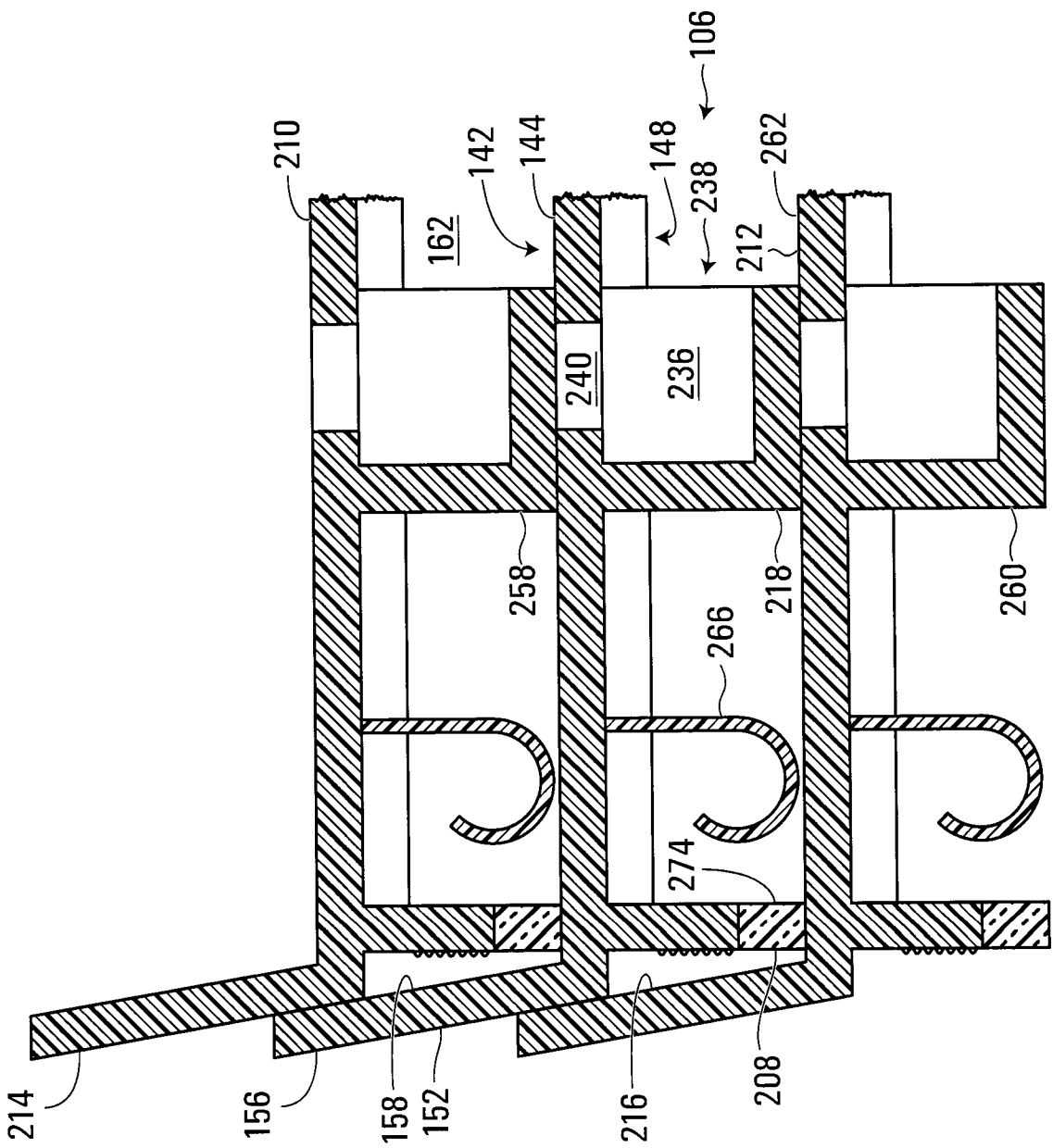
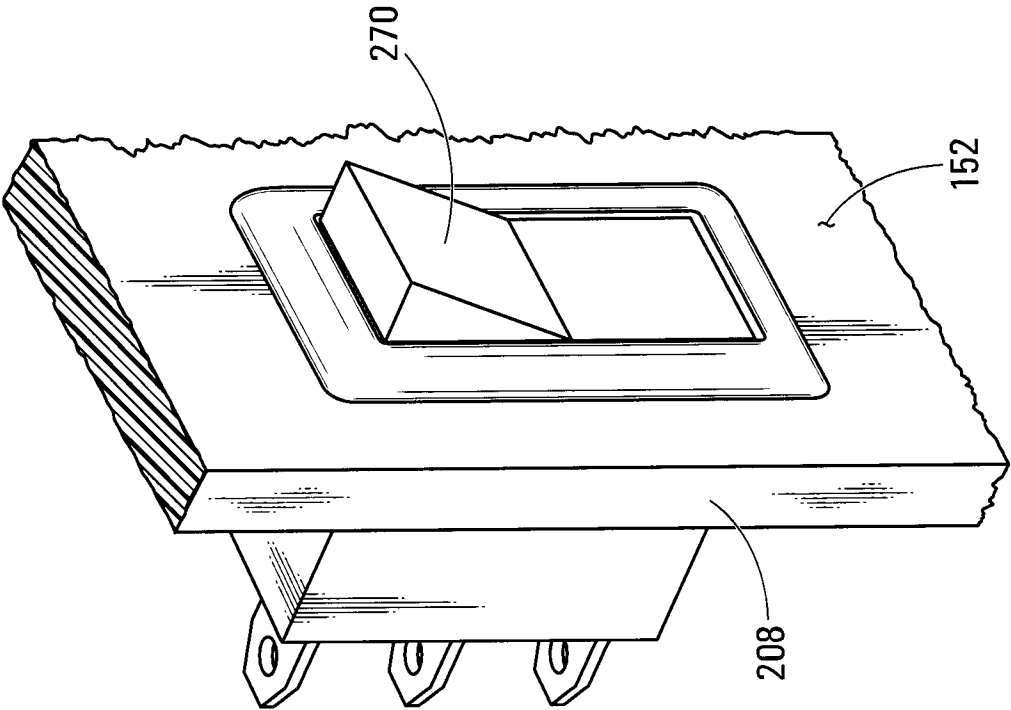


FIG. 8

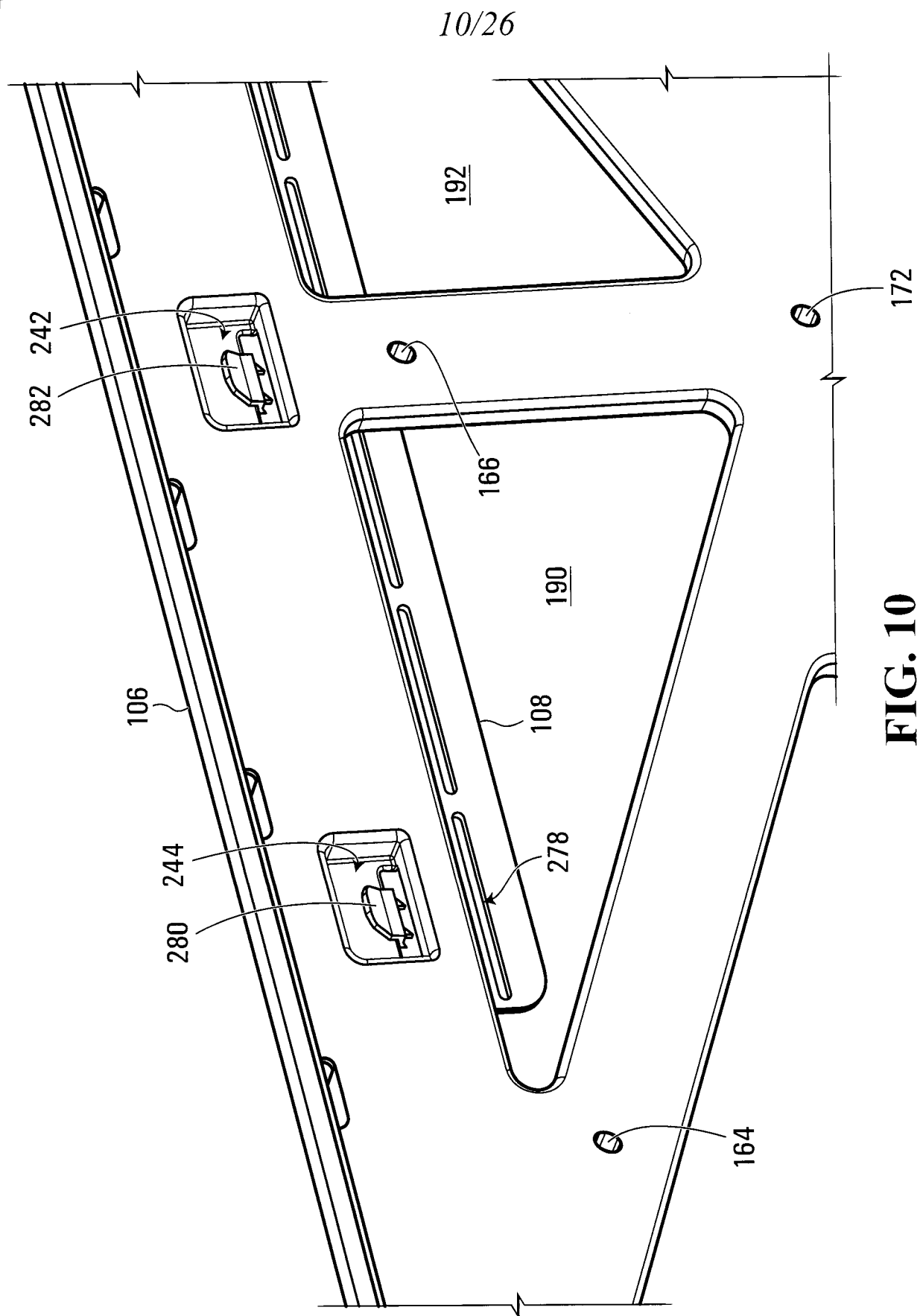
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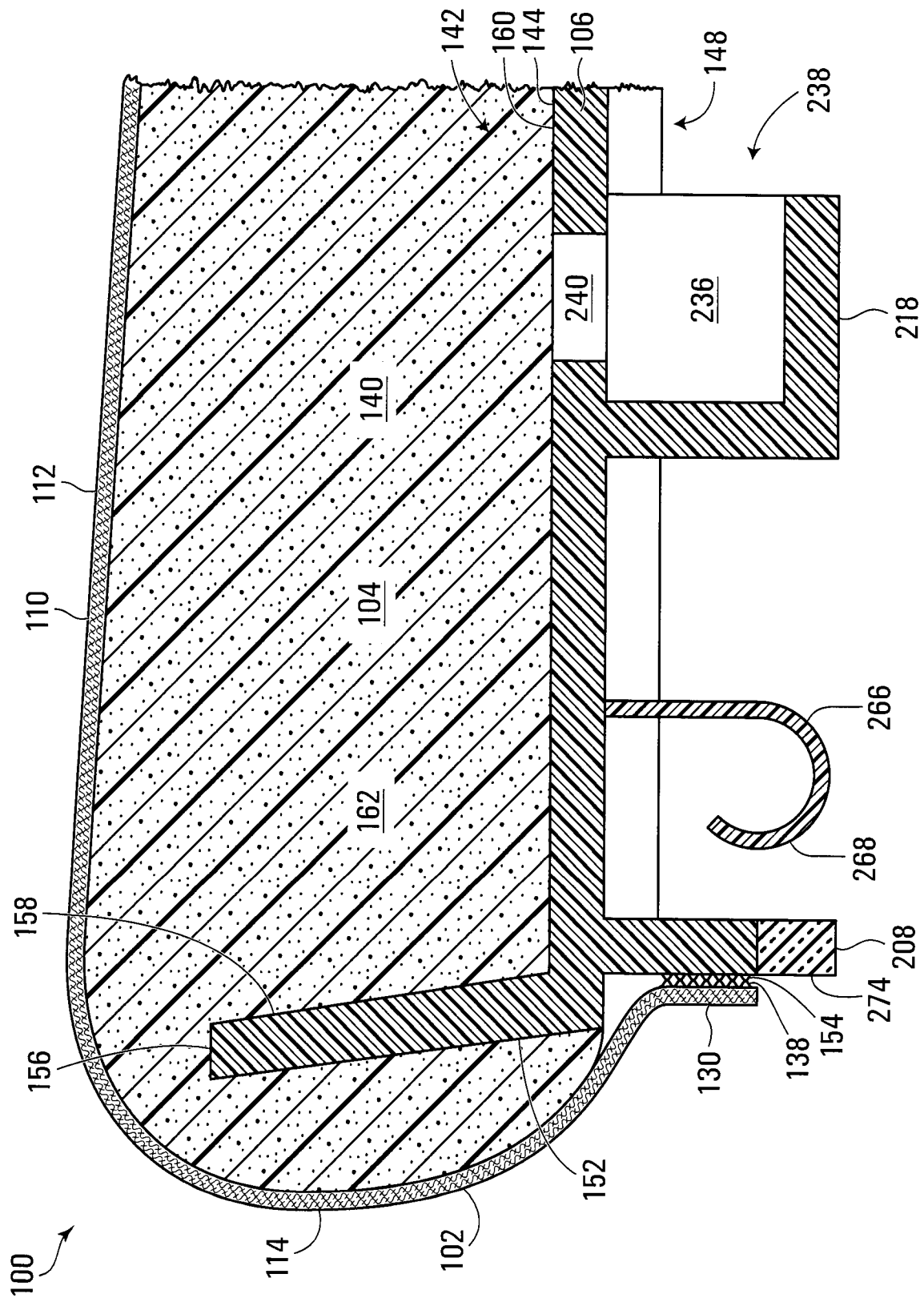


**FIG. 9**

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**FIG. 10**



**FIG. 11**



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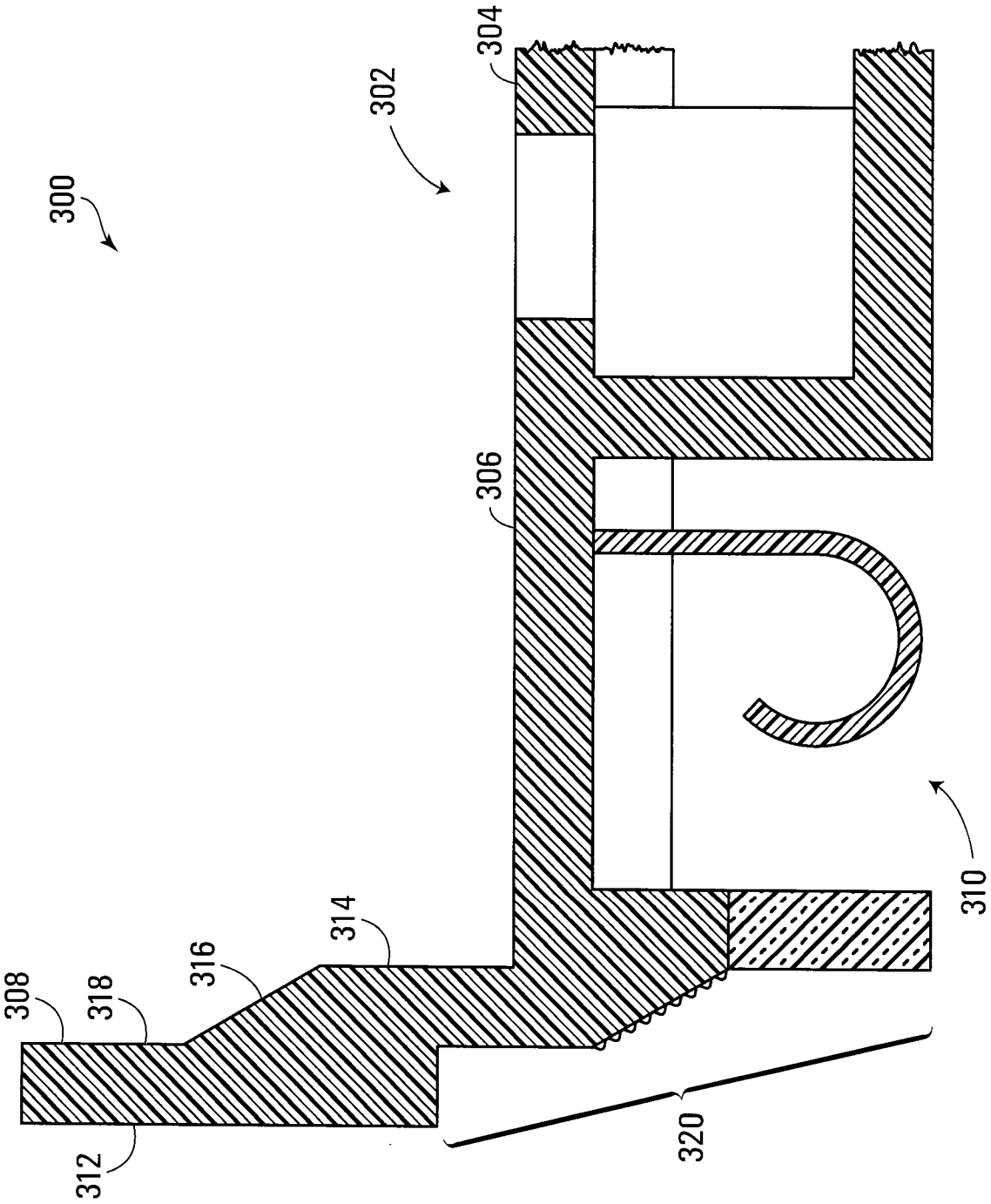


FIG. 12

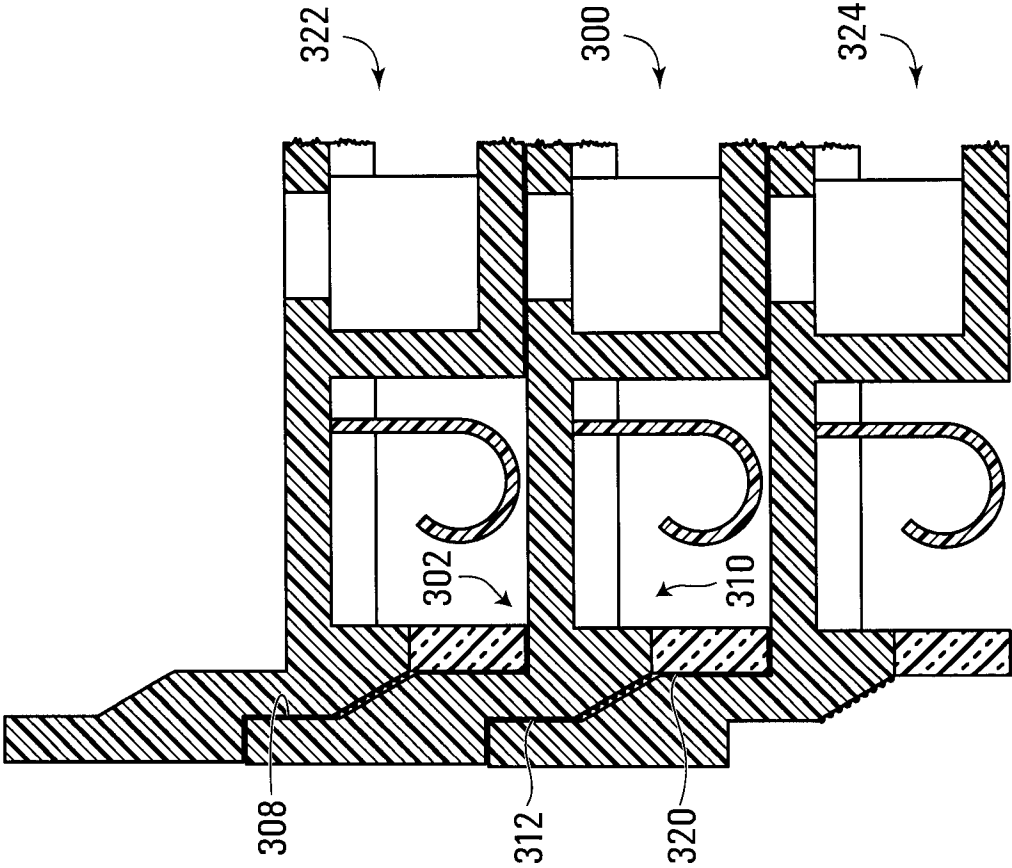
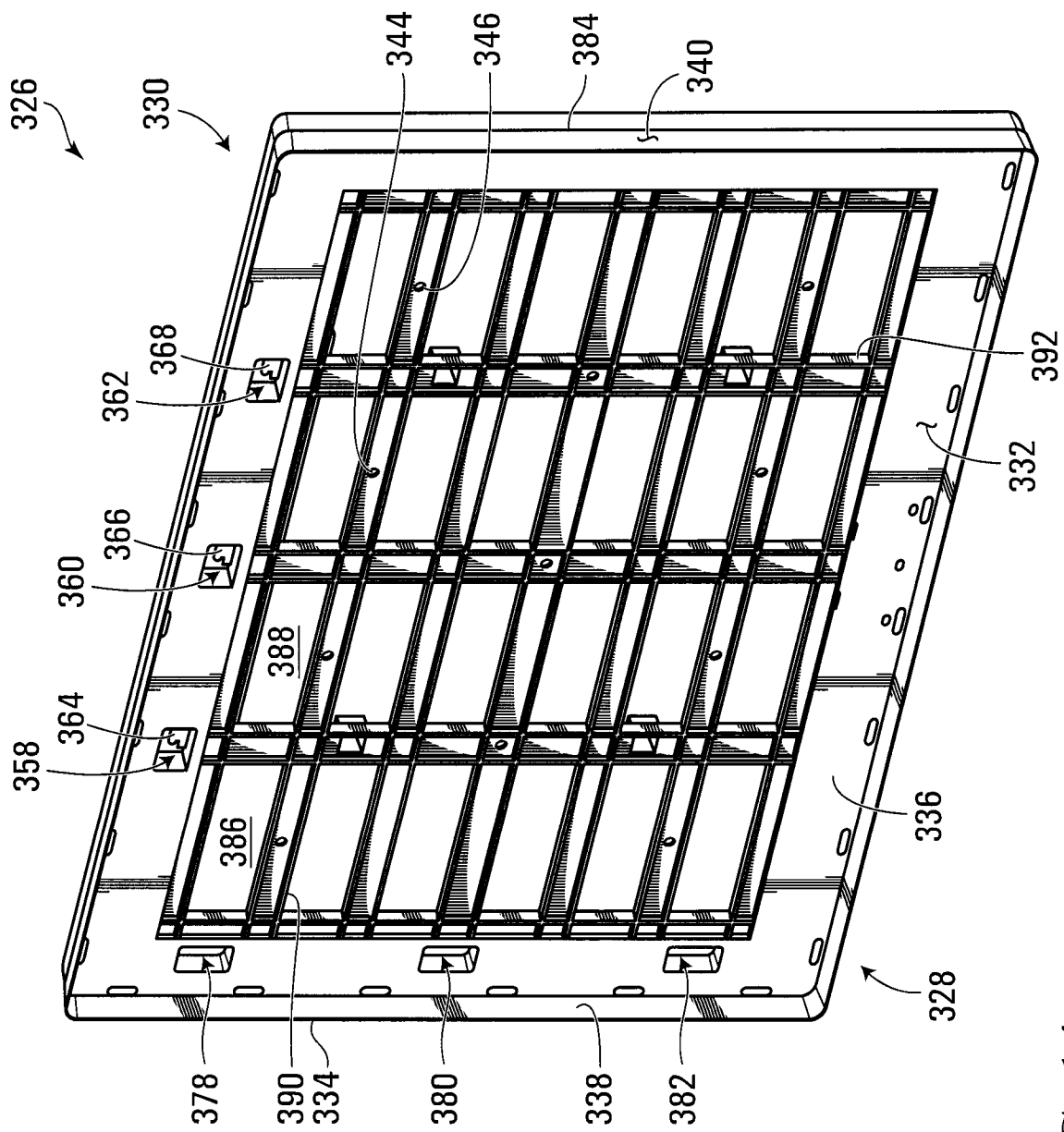
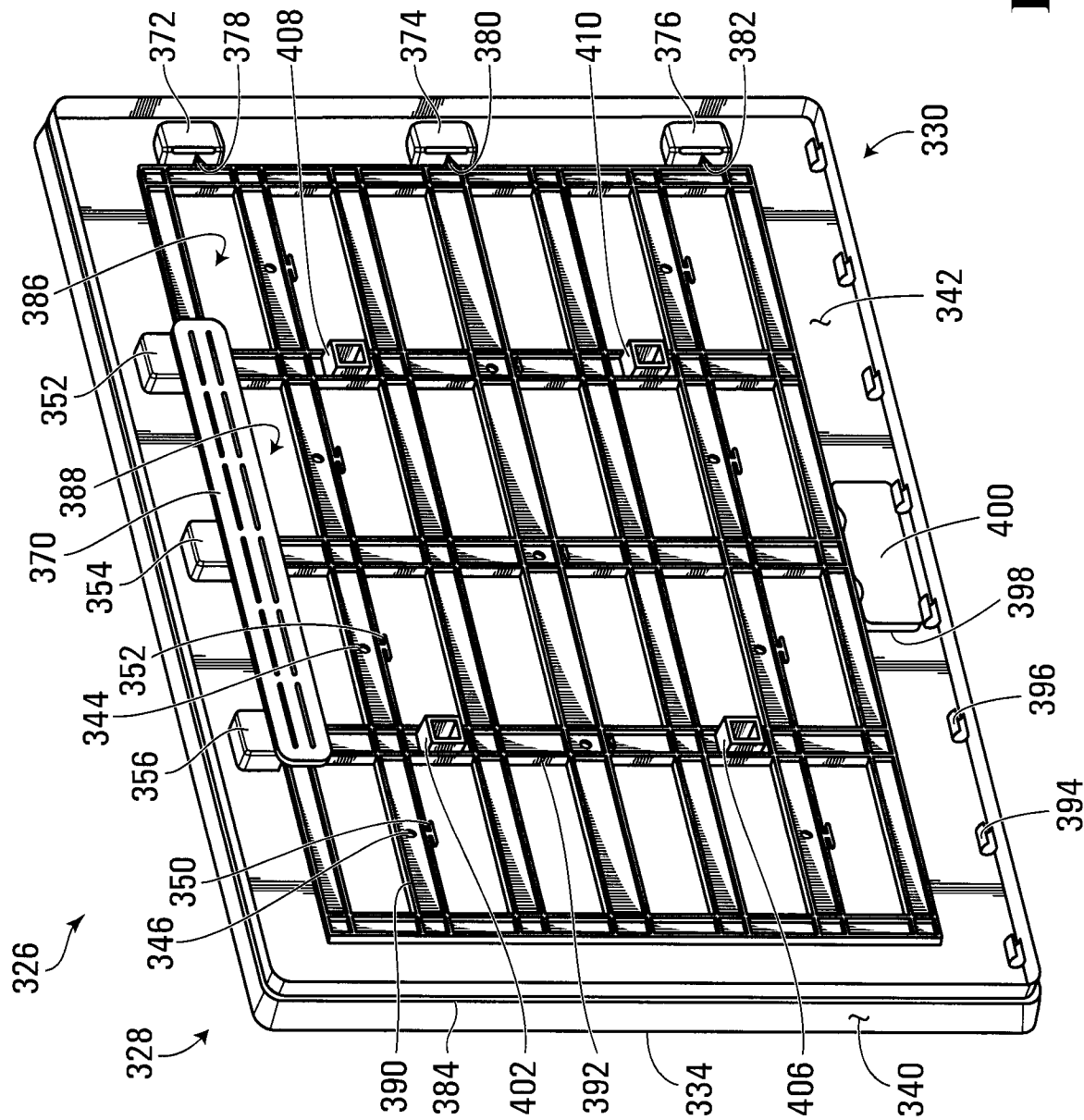


FIG. 13



**FIG. 14**

FIG. 15



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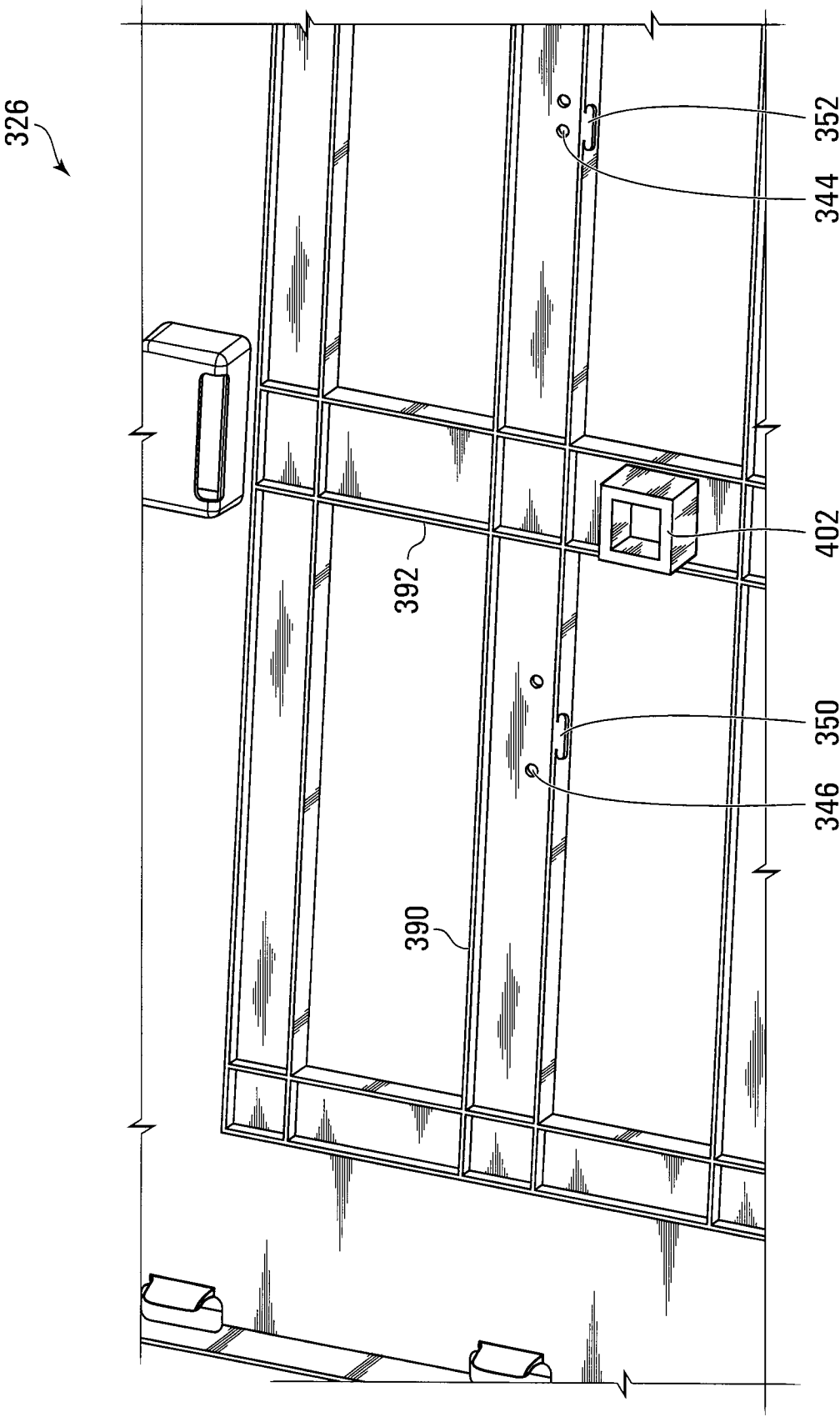


FIG. 16

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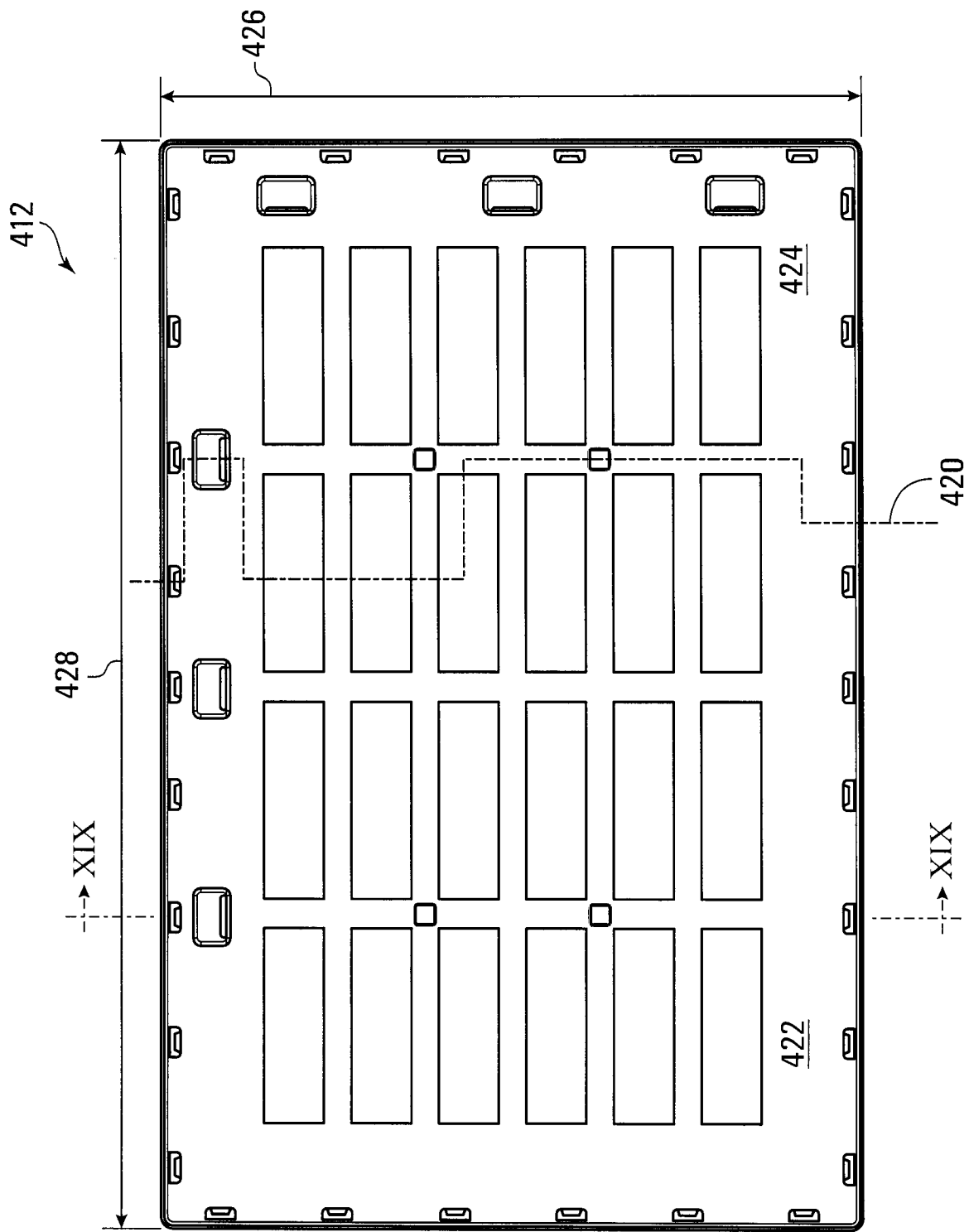


FIG. 17

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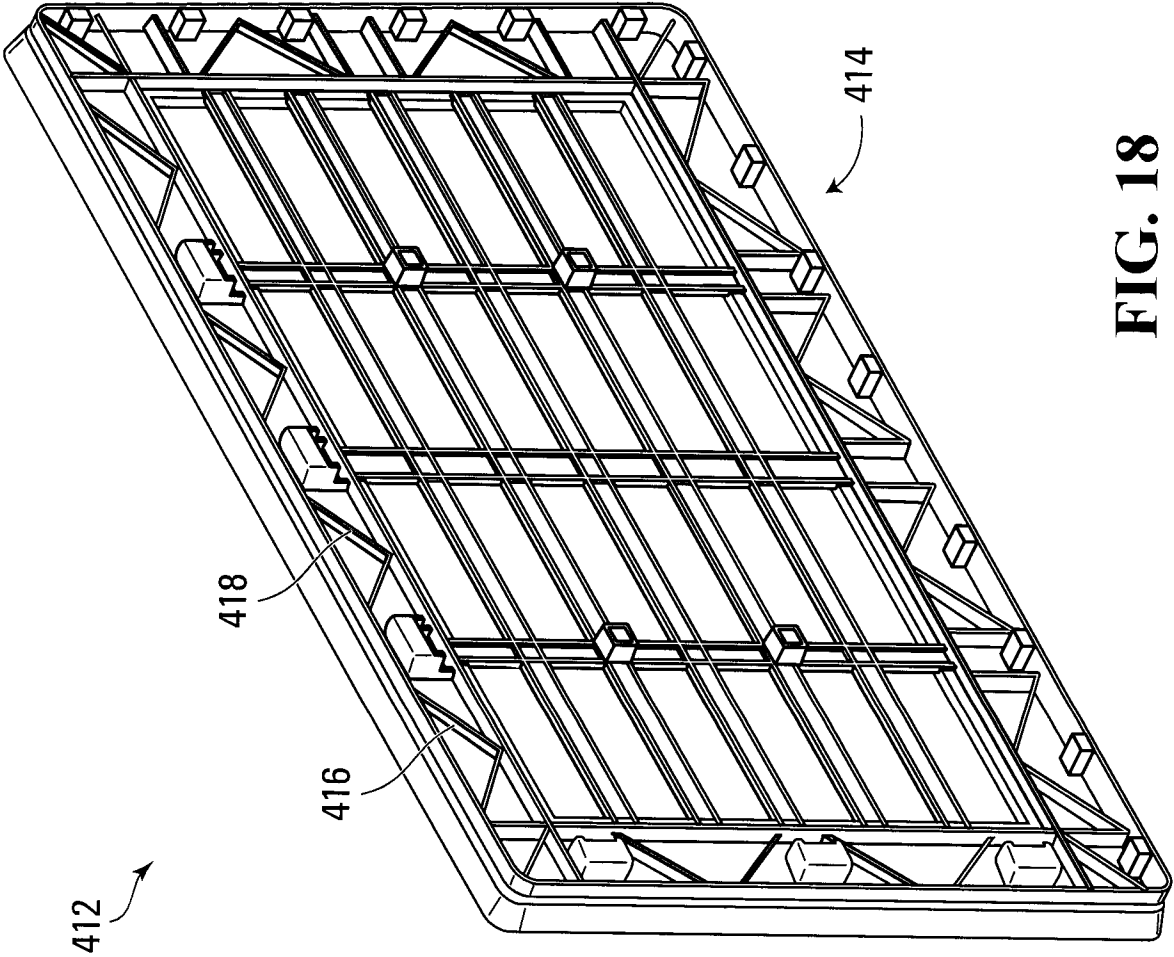


FIG. 18

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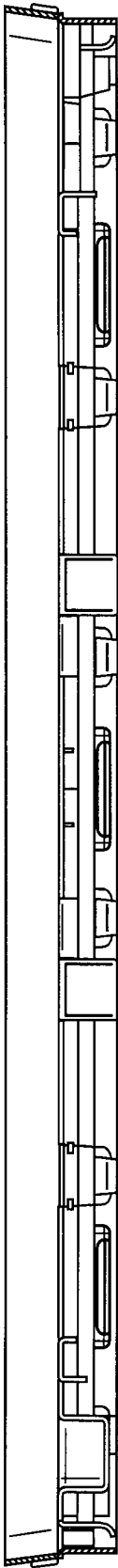


FIG. 19

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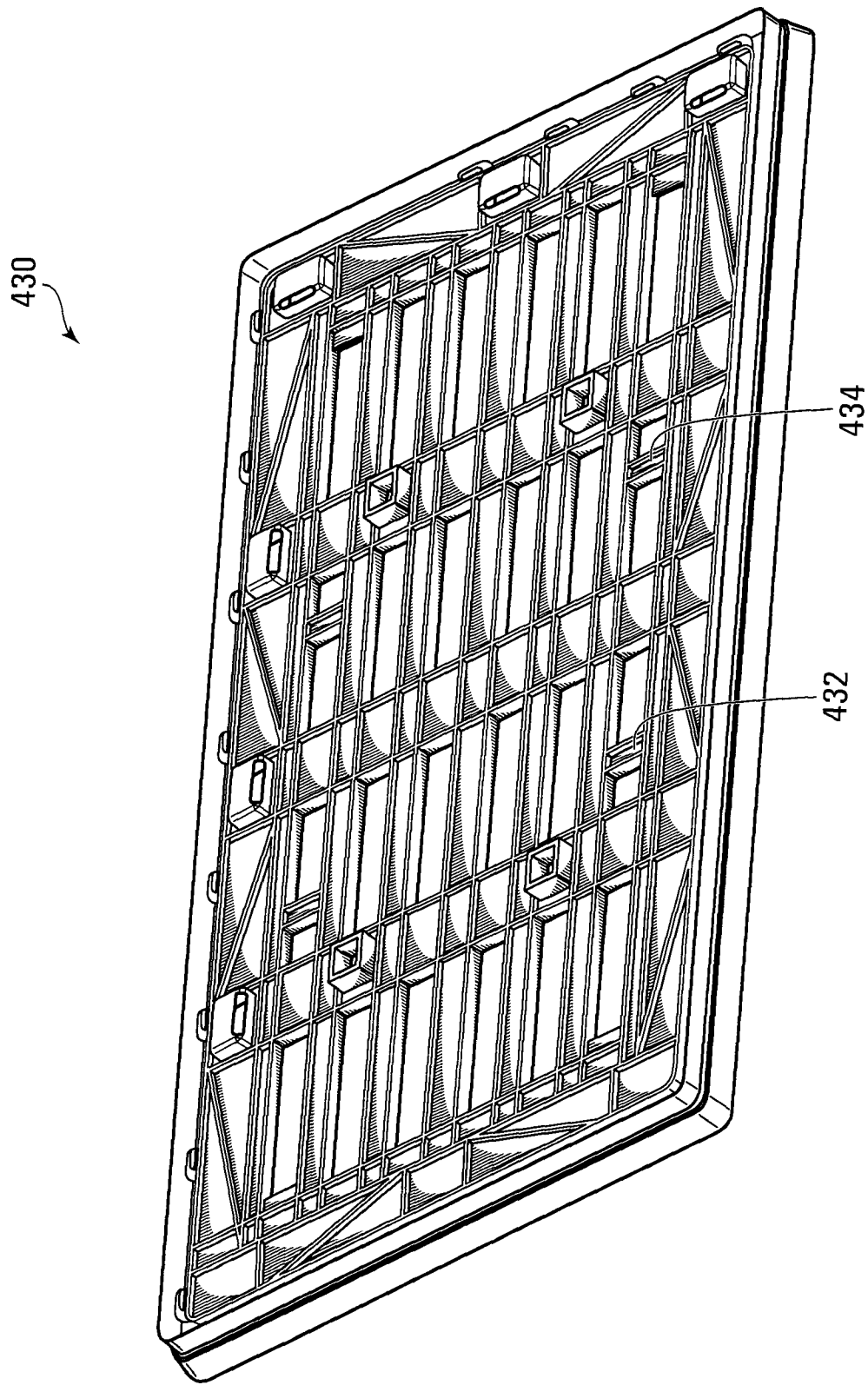
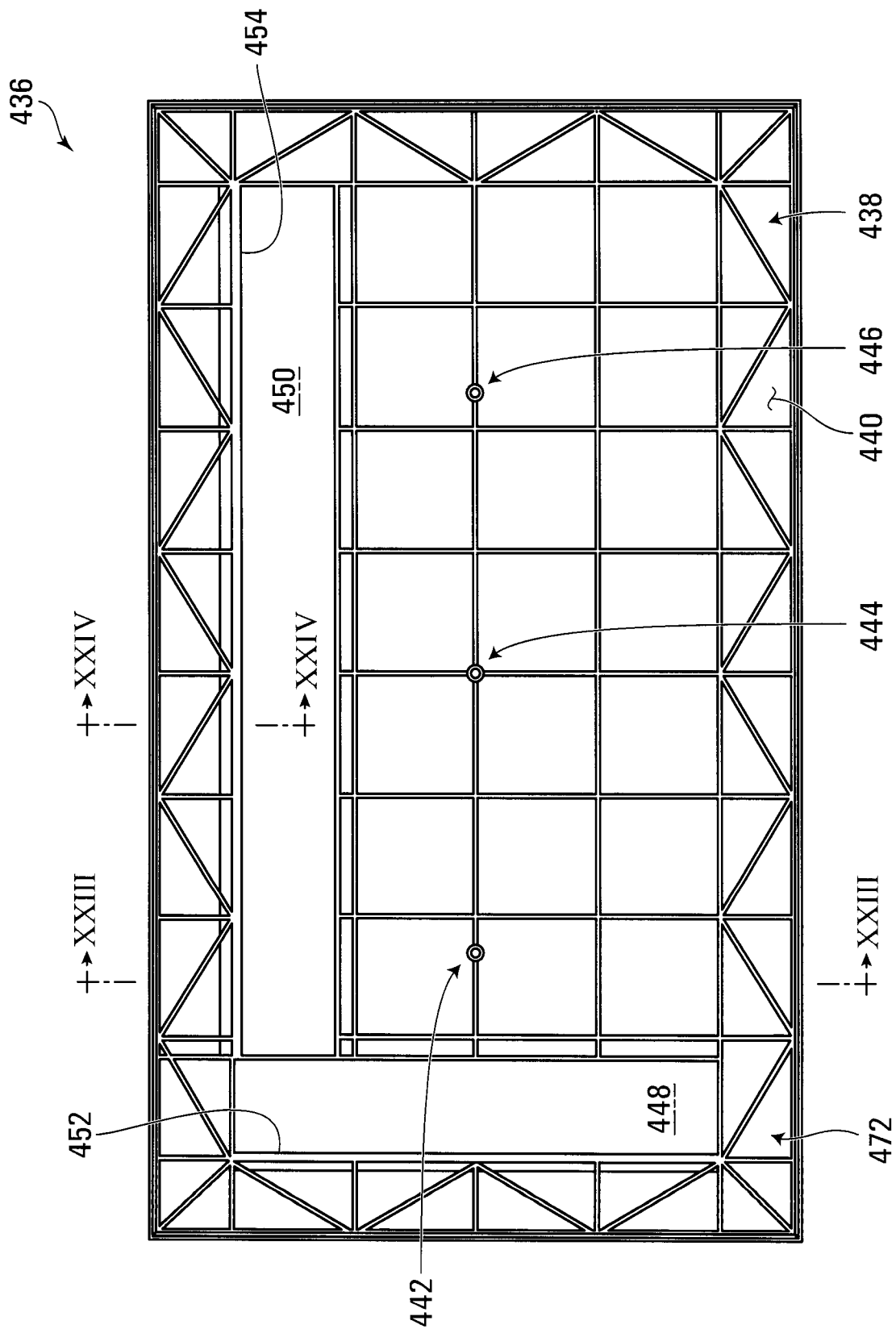


FIG. 20

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**FIG. 21**

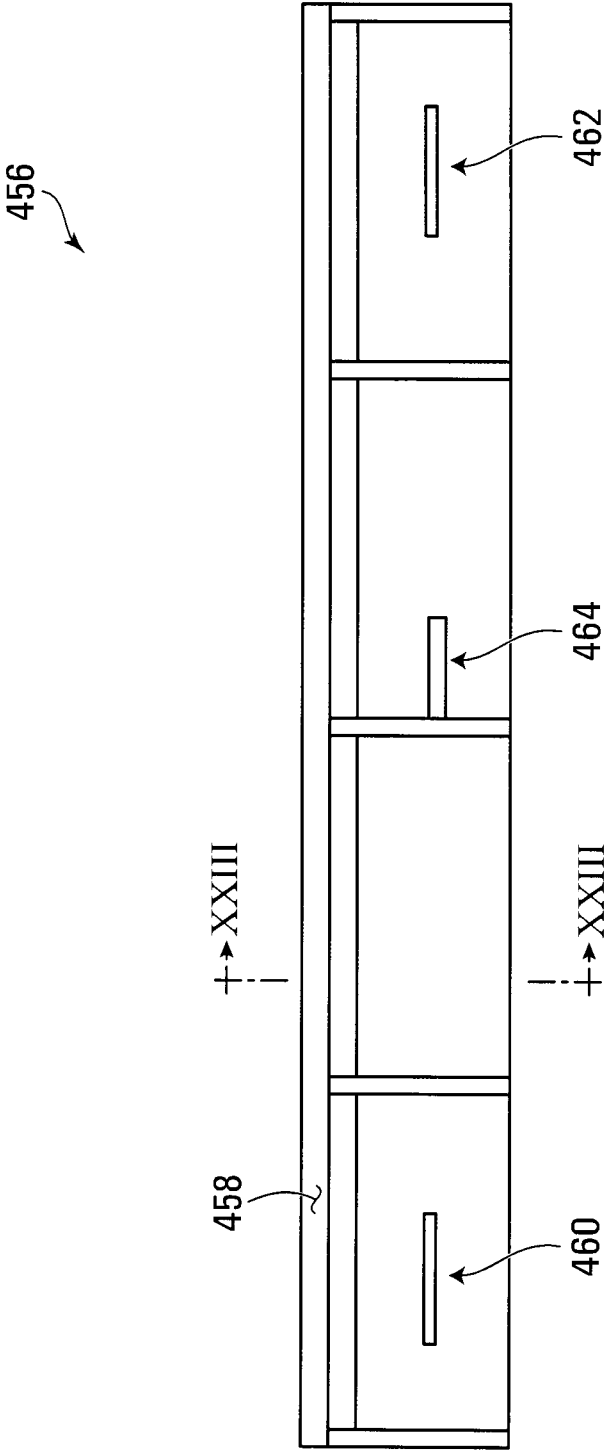
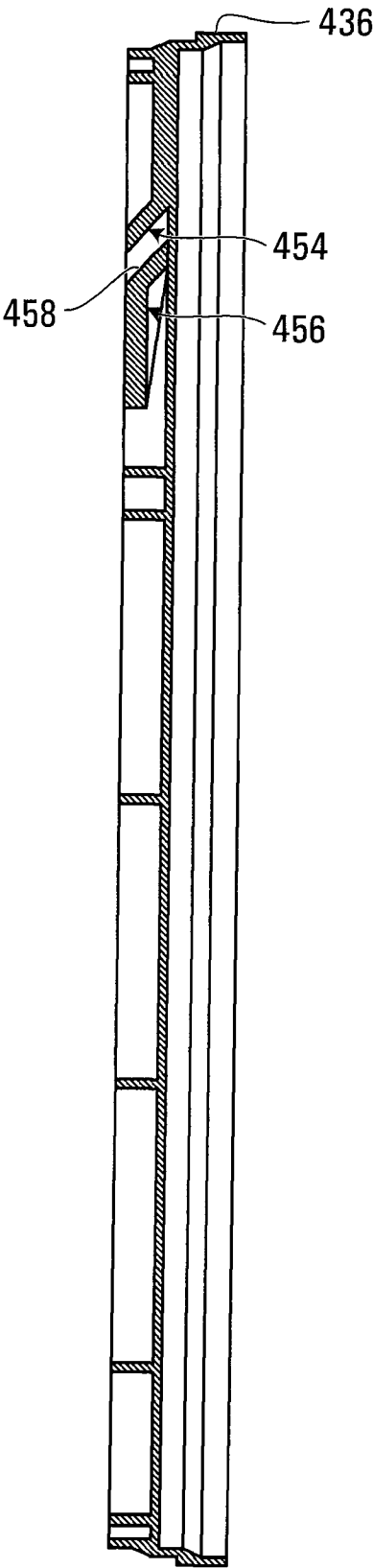


FIG. 22

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**FIG. 23**

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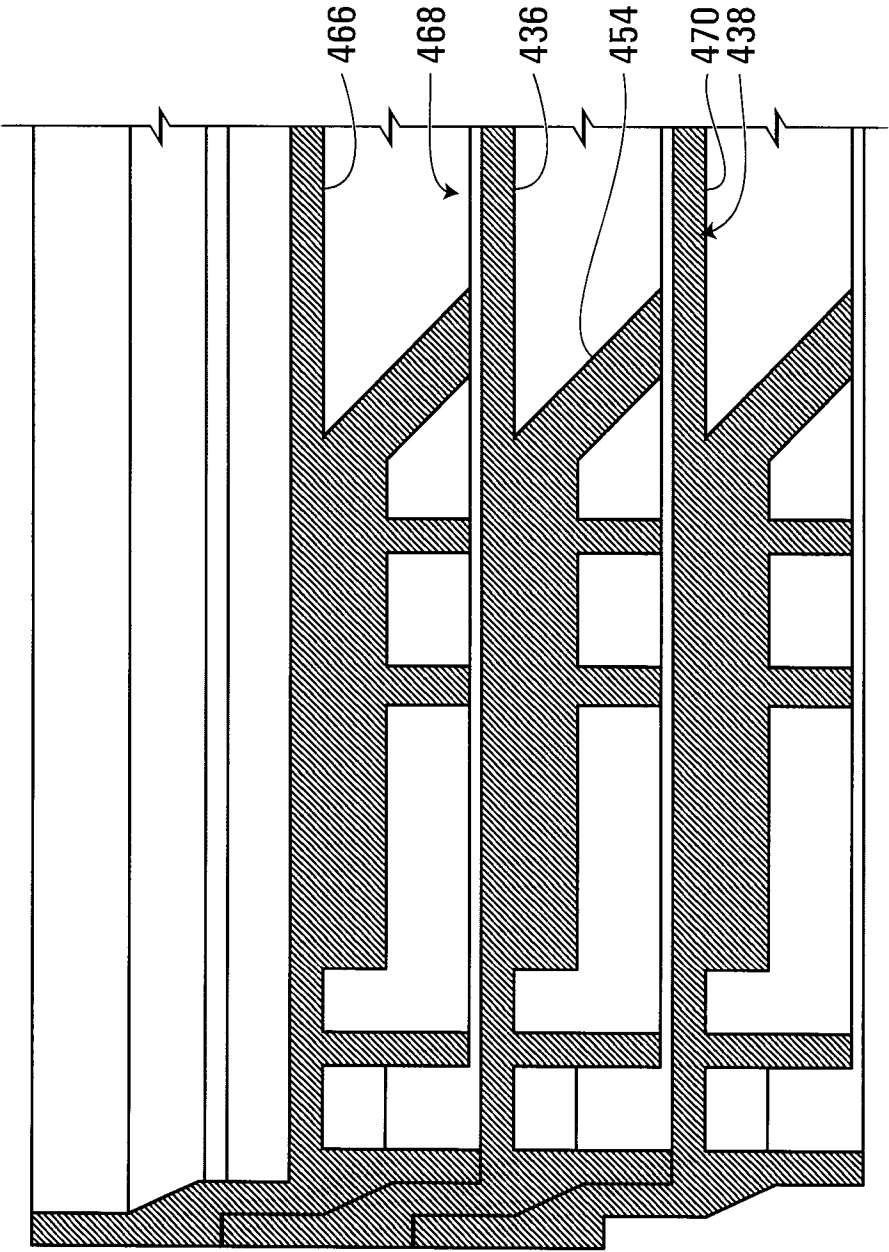


FIG. 24

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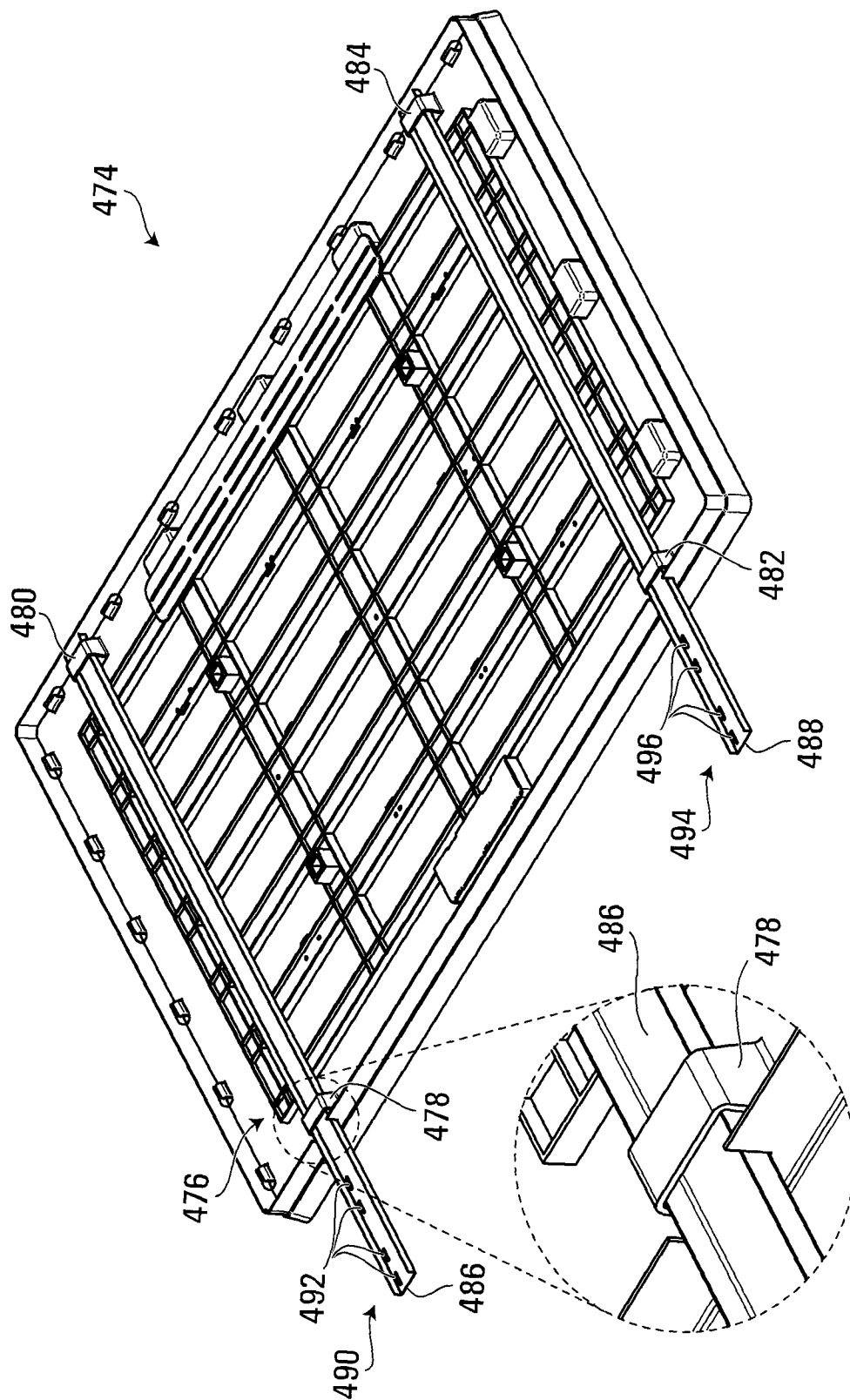
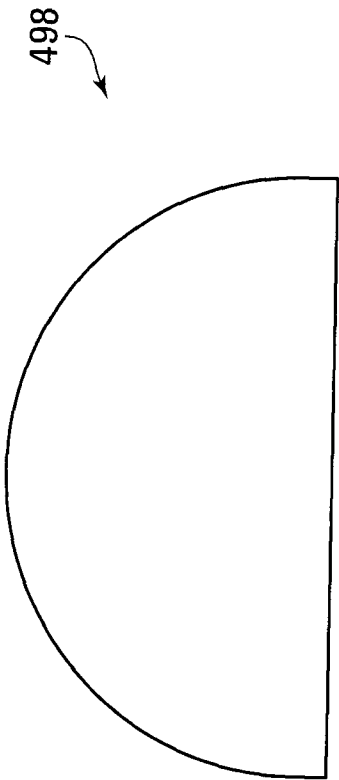
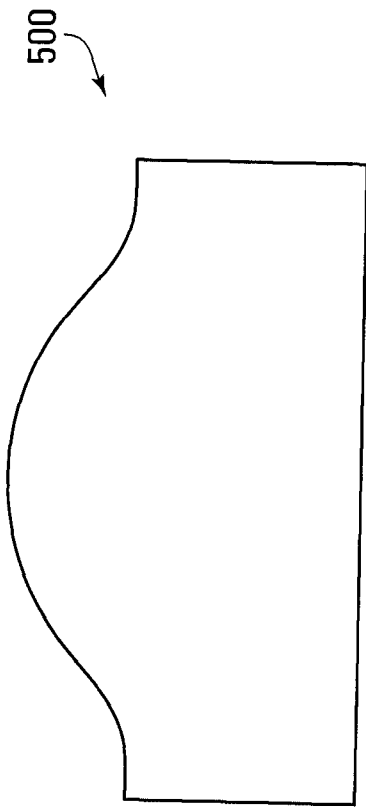


FIG. 25

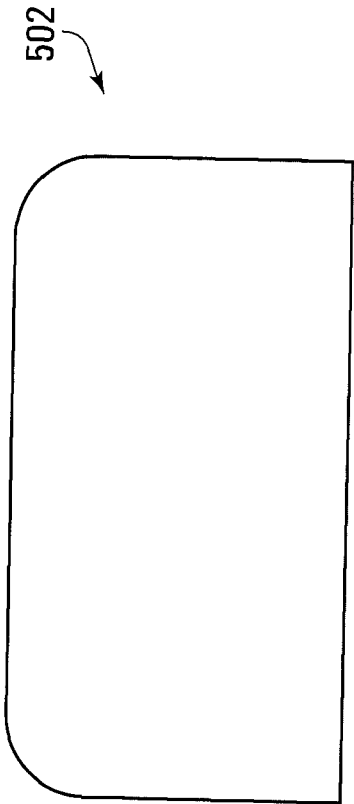
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**FIG. 26**



**FIG. 27**



**FIG. 28**

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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CA2012/000389

## A. CLASSIFICATION OF SUBJECT MATTER

IPC: **A47C 19/00** (2006.01) , **A01M 1/00** (2006.01) , **A01N 59/00** (2006.01) , **A01N 65/00** (2009.01) , **A01P 7/00** (2006.01) , **A47B 96/20** (2006.01) (more IPCs on the last page)  
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(2006.01): A47C 19/00, A01M 1/00, A01N 59/00, A01N 65/00, A01P 7/00, A47B 96/20, B68G 13/00, F16B 12/54

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

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

Databases: Canadian Patent Database (CPD), EPOQUE (X-Full, Epodoc)

Keywords: cover, decorative, remove, replace, front, lateral, edge, hook, loop, velcro, PA1b, peptide, diatomaceous

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	GB2107978A (FLIGELSTONE, Y. S.) 11 May 1983 (11-05-1983) *Figs 1 and 2*	38 - 39 1 - 37 and 44 - 77
A	GB803611A (HORATIO, A. et al.) 29 October 1958 (29-10-1958) *the whole document*	1 - 77
A	US6182307B1 (RUTRICK, J.) 06 February 2001 (06-02-2001) *the whole document*	1 - 77
A	GB2180449A (HEAD, R.) 01 April 1987 (01-04-1987) *the whole document*	1 - 77
A	US4821349A (COHEN, E. S.) 18 April 1989 (18-04-1989) *the whole document*	1 - 77

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

☒ See patent family annex.

* Special categories of cited documents :	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"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
"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)	"&" document member of the same patent family
"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	

Date of the actual completion of the international search

28 June 2012 (28-06-2012)

Date of mailing of the international search report

08 August 2012 (08-08-2012)

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Facsimile No.: 001-819-953-2476

Authorized officer

Adeeb Zarifa (819) 934-2692



International application No.  
PCT/CA2012/000389

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
GB2107978A	11 May 1983 (11-05-1983)	None	
GB803611A	29 October 1958 (29-10-1958)	None	
US6182307B1	06 February 2001 (06-02-2001)	None	
GB2180449A	01 April 1987 (01-04-1987)	GB8523035D0	23 October 1985 (23-10-1985)
US4821349A	18 April 1989 (18-04-1989)	None	

*B68G 13/00* (2006.01) , *F16B 12/54* (2006.01)