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(71) Applicant: **THE BOEING COMPANY** [US/US]; 100 North Riverside Plaza, Chicago, Illinois 60606-2016 (US).

(72) Inventors: **REES, Joseph W.**; 325 James S McDonnell Boulevard, Hazelwood, Missouri 63042 (US). **GRIP, Robert Erik**; 2201 Seal Beach Boulevard, Seal Beach, California 90740 (US). **DRONEY, Christopher K.**; 5301 Bolsa Avenue, Huntington Beach, California 92647 (US). **BERON-RAWDON, Deborah Ann**; 5301 Bolsa Avenue, Huntington Beach, California 92647 (US).

(74) Agents: **WOO, Euclid** et al.; The Boeing Company, PO Box 2515, MC 110-SD54, Seal Beach, California 90740-1515 (US).

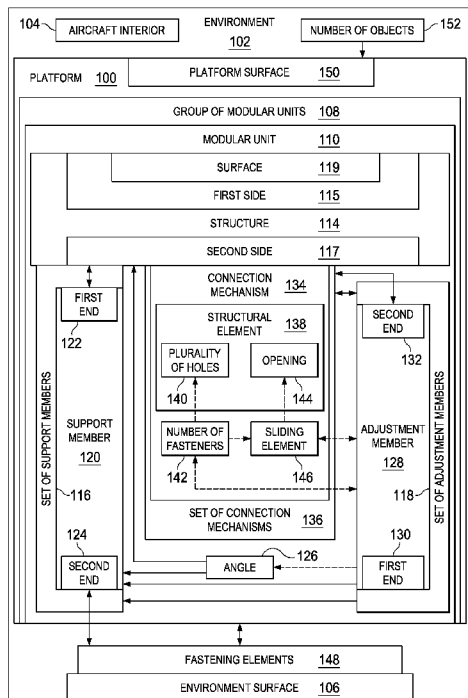
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(54) Title: PLATFORM WITH ADJUSTABLE SUPPORT MEMBERS

(57) Abstract: A method and apparatus for forming a platform. In one embodiment, the apparatus comprises a set of support members associated with the structure, and a set of adjustment members. An adjustment member in the set of adjustment members is associated with a corresponding support member in the set of support members. The adjustment member is configured to adjust an angle between the corresponding support member and the structure.





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PLATFORM WITH ADJUSTABLE SUPPORT MEMBERS

BACKGROUND INFORMATION

5 1. **Field:**

The present disclosure relates generally to platforms, and in particular, to a platform having adjustable supports. Still more particularly, the present disclosure relates to a platform having supports that may be adjusted for attachment to fastening elements on a surface that are variably-spaced.

10

2. **Background:**

Transport aircraft may be used to perform different types of missions. The different types of missions that may be performed by a transport aircraft may include, for example, without limitation, a cargo transport mission, a personnel transport mission, a rescue mission, a supply delivery mission, one or more other types of missions, or some combination thereof. As one illustrative example, a military transport aircraft may be used to transport military troops, military equipment, weapons, medical supplies, food supplies, and/or other types of cargo.

In some cases, the amount of cargo and/or the number of personnel that can be transported by a transport aircraft may be limited by the space inside the transport aircraft, and in particular, the space inside the fuselage of the transport aircraft. More specifically, the amount of cargo and/or the number of personnel that can be transported by a transport aircraft may be limited by the area of the floor inside the fuselage of the aircraft.

The space limitations inside a transport aircraft may increase costs and/or the time needed to perform certain types of missions more than desired. For example, a particular mission may require that a selected amount of cargo be transported from a starting location to an end location using a transport aircraft. However, space limitations inside the transport aircraft may allow only a portion of the selected amount of cargo to be transported during each trip between the starting location and the end location. Consequently, a greater number of trips between these two locations may be needed to complete the mission. These additional trips may increase the cost of the mission and the time needed to complete the mission more than desired.

Additionally, the number of personnel that may be transported in a transport aircraft may depend on the existing floor area inside the fuselage of the transport aircraft available for seating. Some currently available transport aircraft may be unable to accommodate seating for more than a selected number of passengers. Further, some currently available seating solutions for increasing seating may include adding rows of seats that extend down the length of the fuselage or rows of seats that extend across the width of the fuselage.

However, these types of seating configurations may cause overcrowding. Further, these types of seating configurations may not increase the amount of seating available for passengers as much as desired. Therefore, it would be desirable to have a method and apparatus that takes into account at least some of the issues discussed above, as well as other possible issues.

SUMMARY

In one illustrative embodiment, an apparatus comprises a structure, a set of support members associated with the structure, and a set of adjustment members. An adjustment member in the set of adjustment members is associated with a corresponding support member in the set of support members. The adjustment member is configured to adjust an angle between the corresponding support member and the structure.

In another illustrative embodiment, a platform comprises a group of modular units connected to each other and a platform surface. Each modular unit in the group of modular units comprises a structure, a set of support members associated with the structure, and a set of adjustment members. An adjustment member in the set of adjustment members is associated with a corresponding support member in the set of support members. The adjustment member is configured to adjust an angle between the corresponding support member and the structure. The platform surface is formed by the group of modular units and is substantially planar within selected tolerances.

In yet another illustrative embodiment, a method for assembling a platform is provided. A modular unit is positioned relative to an environment surface of an environment. The modular unit comprises a structure, a set of support members associated with the structure, and a set of adjustment members. An angle is adjusted between a support member in the set of support members and the structure using an

adjustment member in the set of adjustment members associated with the support member. The support member is attached to the environment surface of the environment.

According to an aspect of the present disclosure there is provided an apparatus
5 comprising a structure, a set of support members associated with the structure, and a set of adjustment members in which an adjustment member in the set of adjustment members is associated with a corresponding support member in the set of support members and is configured to adjust an angle between the corresponding support member and the structure. Advantageously the structure, the set of support members,
10 and the set of adjustment members form a modular unit in which the modular unit is one of a group of modular units configured to form a platform. Preferably the platform is configured for use in an environment in which each support member in the set of support members for each modular unit in the group of modular units is configured to be attached to an environment surface of the environment. Preferably the platform surface
15 formed by a surface of the structure for each modular unit in the group of modular units connected together to form the platform is substantially parallel to the environment surface within selected tolerances. Advantageously the structure further comprises a first side in which a surface of the structure at the first side of the structure is substantially planar, and a second side in which the set of support members is
20 associated with the structure at the second side of the structure. Advantageously the apparatus further comprises a set of connection mechanisms in which a connection mechanism in the set of connection mechanisms is configured to connect a corresponding adjustment member in the set of adjustment members to the structure. Preferably the connection mechanism comprises a structural element having a plurality
25 of holes, and a number of fasteners configured to connect the corresponding adjustment member to a hole in the plurality of holes, wherein each hole in the plurality of holes corresponds to a different value for an angle between the structure and the corresponding support member with which the corresponding adjustment member is associated. Preferably the connection mechanism comprises a structural element
30 having an opening, a sliding element configured to move in a direction along an axis within the opening of the structure, wherein a position of the sliding element within the opening of the structure determines the angle between the structure and the corresponding support member with which the corresponding adjustment member is

associated, and a number of fasteners configured to connect the corresponding adjustment member to the sliding element. Advantageously the structure is a first structure, the set of support members is a first set of support members, and the set of adjustment members is a first set of adjustment members and further comprising a second structure, a second set of support members associated with the second structure, a second set of adjustment members in which an adjustment member in the second set of adjustment members is associated with a corresponding support member in the second set of support members and configured to adjust an angle between the corresponding support member and the second structure. Preferably the first structure, the first set of support members, and the first set of adjustment members form a first modular unit in a group of modular units and the second structure, the second set of support members, and the second set of adjustment members form a second modular unit in the group of modular units and wherein modular units in the group of modular units are connected to each other to form a platform having a platform surface that is substantially planar within selected tolerances. Preferably the platform is configured to support a number of objects placed on the platform surface of the platform. Advantageously the support member in the set of support members is configured to be attached to a corresponding fastening element on an environment surface of an environment. Preferably the environment is selected from one of an interior of an aircraft, an interior of a space shuttle, an interior of a ship, an area on a deck of a ship, a storage space, and an interior of a container.

According to an aspect of the present disclosure there is provided platform comprising a group of modular units connected to each other, wherein each modular unit in the group of modular units comprises a structure, a set of support members associated with the structure, a set of adjustment members in which an adjustment member in the set of adjustment members is associated with a corresponding support member in the set of support members and is configured to adjust an angle between the corresponding support member and the structure, and a platform surface formed by the group of modular units in which the platform surface is substantially planar within selected tolerances. Advantageously a modular unit in the group of modular units is configured to be connected to at least one other modular unit in the group of modular units. Advantageously a number of support members in the set of support members for a first modular unit in the group of modular units is different from number of support

members in the set of support members for a second modular unit in the group of modular units.

According to an aspect of the present disclosure there is provided A method for assembling a platform, the method comprising positioning a modular unit relative to an environment surface of an environment, wherein the modular unit comprises a structure, a set of support members associated with the structure, and a set of adjustment members, adjusting an angle between a support member in the set of support members and the structure using an adjustment member in the set of adjustment members associated with the support member, and attaching the support member to the environment surface of the environment. Advantageously the step of adjusting the angle between the support member in the set of support members and the structure using the adjustment member in the set of adjustment members associated with the support member comprises adjusting the angle between the support member in the set of support members and the structure using the adjustment member in the set of adjustment members associated with the support member such that an end of the support member is positioned at a location of a fastening element on the environment surface of the environment. Preferably the step of adjusting the angle between the support member in the set of support members and the structure using the adjustment member in the set of adjustment members associated with the support member comprises adjusting the angle between the support member in the set of support members and the structure using the adjustment member in the set of adjustment members associated with the support member and a connection mechanism in which the connection mechanism is configured to connect the adjustment member to the structure. Advantageously the modular unit is a first modular unit, the set of support members is a first set of support members, and the set of adjustment members is a first set of adjustment members and further comprising connecting a second modular unit to the first modular unit to form the platform, wherein the second modular unit comprises a second structure, a second set of support members associated with the structure, and a second set of adjustment members, adjusting an angle between a support member in the second set of support members and the second structure using an adjustment member in the second set of adjustment members associated with the support member in the second set of support members, wherein the platform has a platform surface that is substantially planar within selected tolerances, and attaching the support member in

the second set of support members to the environment surface of the environment, wherein the platform surface is substantially parallel to the environment surface within selected tolerances.

The features and functions can be achieved independently in various
5 embodiments of the present disclosure or may be combined in yet other embodiments in which further details can be seen with reference to the following description and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the illustrative embodiments are set
10 forth in the appended claims. The illustrative embodiments, however, as well as a preferred mode of use, further objectives and features thereof, will best be understood by reference to the following detailed description of an illustrative embodiment of the present disclosure when read in conjunction with the accompanying drawings, wherein:

Figure 1 is an illustration of a platform in the form of a block diagram in
15 accordance with an illustrative embodiment;

Figure 2 is an illustration of a top isometric view of a modular unit in accordance with an illustrative embodiment;

Figure 3 is an illustration of a bottom isometric view of a modular unit in accordance with an illustrative embodiment;

Figure 4 is an illustration of an enlarged view of a portion of a modular unit in
20 accordance with an illustrative embodiment;

Figure 5 is an illustration of a cross-sectional side view of a modular unit in accordance with an illustrative embodiment;

Figure 6 is an illustration of a cross-sectional side view of a modular unit in
25 accordance with an illustrative embodiment;

Figure 7 is an illustration of a cross-sectional side view of a modular unit in accordance with an illustrative embodiment;

Figure 8 is an illustration of a front view of a modular unit in accordance with an illustrative embodiment;

Figure 9 is an illustration of a top isometric view of two modular units connected
30 to each other in accordance with an illustrative embodiment;

Figure 10 is an illustration of a bottom isometric view of two modular units connected to each other in accordance with an illustrative embodiment;

Figure 11 is an illustration of an enlarged view of a connection between a modular unit and another modular unit in accordance with an illustrative embodiment;

5 **Figure 12** is an illustration of a cross-sectional side view of two modular units connected to each other in accordance with an illustrative embodiment;

Figure 13 is an illustration of a fully assembled platform in accordance with an illustrative embodiment;

10 **Figure 14** is an illustration of a platform being used for additional seating within an environment in accordance with an illustrative embodiment;

Figure 15 is an illustration of a modular unit being folded into a compact configuration in accordance with an illustrative embodiment;

Figure 16 is an illustration of a process for assembling a platform in accordance with an illustrative embodiment;

15 **Figure 17** is an illustration of an aircraft manufacturing and service method in accordance with an illustrative embodiment; and

Figure 18 is an illustration of an aircraft in the form of a block diagram in accordance with an illustrative embodiment.

DETAILED DESCRIPTION

20 The different illustrative embodiments recognize and take into account different considerations. For example, the different illustrative embodiments recognize and take into account that it may be desirable to use a platform that functions as a second floor inside the fuselage of a transport aircraft. This second floor can be used to increase the space available for transporting cargo and/or personnel.

25 In particular, a platform may be used to create a second floor over the floor already present inside the fuselage of the transport aircraft. As one illustrative example, a platform may have a structure supported by one or more supports, or “legs”. These supports are used to raise the structure off of the floor inside the fuselage of the transport aircraft. The structure may have a platform surface that forms a second floor
30 inside the fuselage when the structure is raised off of the floor inside the fuselage of the transport aircraft.

The illustrative embodiments also recognize and take into account that it may be desirable to have a platform comprised of modular units assembled together in a row. As used herein, a “modular unit” is a standardized unit. In other words, each of the modular units used to form the platform would have a similar configuration or same configuration. Each of these modular units may be configured to attach to one or more other modular units.

Additionally, the illustrative embodiments recognize and take into account that some transport aircraft have fastening elements already present on the floor. For example, certain types of military transport aircraft have tie-down rings already present on the floor inside the fuselage. These tie-down rings are typically used for securing cargo, pallets, storage containers, passenger seats, and other types of objects.

The illustrative embodiments recognize and take into account that these fastening elements may be used to secure the modular units that form the platform to the floor inside the fuselage of the transport aircraft. However, the different illustrative embodiments also recognize and take into account that these fastening elements may not be equally spaced in some types of transport aircraft.

As one illustrative example, the fastening elements in a military transport aircraft may be equally spaced across the width of the fuselage of the aircraft but unequally spaced along the length of the fuselage. Unequal spacing along the width of the fuselage, the length of the fuselage, or both the width of the fuselage and the length of the fuselage may be referred to as variable spacing. The different illustrative embodiments recognize and take into account that attaching the ends of the supports of the modular units to fastening elements that are variably spaced may not be possible when the supports attached to the structures that make up these modular units are not moveable.

Thus, the different illustrative embodiments provide a method and apparatus configured to provide a platform that functions as an additional surface above a pre-existing surface within an environment. In particular, the different illustrative embodiments provide a platform that has adjustable supports. These supports may be adjusted such that the ends of the supports can be attached to fastening elements, such as tie-down rings, that are variably spaced on the surface within the same environment.

With reference now to **Figure 1**, an illustration of a platform in the form of a block diagram is depicted in accordance with an illustrative embodiment. In these illustrative

examples, platform **100** may be configured for use in environment **102**. Environment **102** may be any environment in which an additional surface is needed.

For example, environment **102** may be selected from one of, but is not limited to, an interior of an aircraft, an interior of a ship, an interior of a space shuttle, an area on a deck of a ship, a storage space, an interior of a container, or some other type of mobile or stationary environment. In one illustrative example, environment **102** takes the form of aircraft interior **104**. In this illustrative example, aircraft interior **104** is the interior of a fuselage of a transport aircraft.

Platform **100** may be used to create an additional surface above environment surface **106** of environment **102**. In some illustrative examples, environment surface **106** of environment **102** is the floor or ground surface of environment **102**. For example, when environment **102** is aircraft interior **104**, environment surface **106** is the floor of aircraft interior **104**. In these illustrative examples, environment surface **106** is substantially planar. In other words, environment surface **106** may be substantially level.

In these illustrative examples, platform **100** comprises group of modular units **108**. Group of modular units **108** have been assembled together to form platform **100**. As used herein, a “group of” items means one or more items. For example, group of modular units **108** means one or more modular units.

Each modular unit in group of modular units **108** has a similar or same configuration. Of course, in other illustrative examples, one or more of the modular units in group of modular units **108** may have different features or a different configuration from one or more other modular units in group of modular units **108**.

In these illustrative examples, each modular unit in group of modular units **108** comprises a structure supported by a set of support members and a set of adjustment members. As used herein, a “set of” items means one or more items. For example, a set of support members is one or more support members and a set of adjustment members is one or more adjustment members.

In some cases, the number of support members in the set of support members for a modular unit may be different than the number of support members in the set of support members for a different modular unit. Similarly, in some cases, the number of adjustment members in the set of adjustment members for a modular unit may be

different than the number of adjustment members in the set of adjustment members for a different modular unit.

Modular unit **110** is an example of a modular unit in group of modular units **108**. As depicted, modular unit **110** comprises structure **114**, set of support members **116**,
5 and set of adjustment members **118**. Structure **114** may be comprised of one or more structural elements. These structural elements may include, for example, without limitation, any number of plates, panels, beams, rods, struts, flanges, elongate structures, and/or other types of structural elements.

Structure **114** has first side **115** and second side **117**. Surface **119** of structure
10 **114** at first side **115** of structure **114** may be substantially planar in these illustrative examples. In other words, surface **119** may be substantially flat.

As used herein, a “support member”, such as a support member in set of support members **116**, is a support for structure **114**. A support member may also be referred to as a “leg”. A support member may have a cylindrical shape, a prism shape, or some
15 other type of shape.

Set of support members **116** is associated with structure **114**. In particular, each support member in set of support members **116** is associated with structure **114**. Support member **120** is an example of one of set of support members **116**. Support member **120** is associated with structure **114**. As used herein, when one component is
20 “associated” with another component, the association is a physical association.

For example, a first component, such as support member **120**, may be considered to be associated with a second component, such as structure **114**, by being secured to the second component, bonded to the second component, mounted to the second component, welded to the second component, fastened to the second
25 component, and/or connected to the second component in some other suitable manner. The first component also may be connected to the second component using a third component. The first component may also be considered to be associated with the second component by being formed as part of and/or an extension of the second component.

Further, when a first component is “connected to” a second component, the first
30 component may be connected directly or indirectly to the second component. In other words, additional components may be present between the first component and the second component. The first component may be considered to be indirectly connected

to the second component when one or more additional components are present between the two components. The first component may be considered to be directly connected to the second component when no additional components are present between the two components.

5 In these illustrative examples, set of support members **116** may be moveably associated with structure **114**. As used herein, a first component that is “moveably connected” to a second component may be allowed to move relative to the second component. For example, support member **120** may be moveably associated with structure **114** such that support member **120** may move relative to structure **114**.

10 As depicted, support member **120** has first end **122** and second end **124**. In one illustrative example, first end **122** of support member **120** is moveably connected to second side **117** of structure **114**. This connection may be formed in a number of different ways. For example, without limitation, a hinge joint, a spherical joint, a ball bearing joint, and/or some other suitable type of joint may be used to connect first end
15 **122** of support member **120** to structure **114**.

In one illustrative example, support member **120** is connected to structure **114** in a manner that allows support member **120** to rotate about an axis at first end **122** of support member **120**, relative to structure **114**. In other words, support member **120** is connected to structure **114** with one degree of rotational freedom. Of course,
20 depending on the implementation, the amount of rotation by support member **120** relative to structure **114** may be constrained.

In another illustrative example, support member **120** is connected to structure **114** in a manner that allows support member **120** to rotate about two axes at first end **122** of support member **120**. In other words, support member **120** is connected to
25 structure **114** with two degrees of rotational freedom. Of course, depending on the implementation, the amount of rotation by support member **120** relative to structure **114** may be constrained.

In these illustrative examples, support member **120** may be connected to structure **114** at angle **126**. Angle **126** may be defined as the angle between a vertical
30 axis through support member **120** and a plane through support member **120**. Support member **120** may be moveably connected to structure **114** such that angle **126** may be adjusted.

Further, in these illustrative examples, support member **120** is removably connected to second side **117** of structure **114**. In other words, support member **120** may be detached and reattached to structure **114** at any point in time.

As depicted, set of adjustment members **118** is associated with set of support members **116**. In one illustrative example, each adjustment member in set of adjustment members **118** is associated with a corresponding support member in set of support members **116**. Of course, in other illustrative examples, set of adjustment members **118** may comprise a single adjustment member associated with more than one support member in set of support members **116**.

Adjustment member **128** is an example of one of set of adjustment members **118**. In some cases, adjustment member **128** may take the form of a brace or some other type of elongate member or elongate structure. Adjustment member **128** is associated with a corresponding support member, which is support member **120** in this illustrative example. Adjustment member **128** is configured to adjust angle **126** between support member **120** and structure **114**.

As depicted, adjustment member **128** has first end **130** and second end **132**. First end **130** of adjustment member **128** is connected to support member **120**. In some cases, first end **130** of adjustment member **128** is connected to second end **124** of support member **120**. In other examples, first end **130** of adjustment member **128** is connected to support member **120** between first end **122** and second end **124** of support member **120**.

In these illustrative examples, second end **132** of adjustment member **128** is connected to second side **117** of structure **114**. In particular, second end **132** of adjustment member **128** is connected to second side **117** of structure **114** using connection mechanism **134**. Connection mechanism **134** is one of set of connection mechanisms **136**. Each connection mechanism in set of connection mechanisms **136** is configured to connect a corresponding adjustment member in set of adjustment members **118** to structure **114**.

Connection mechanism **134** may be implemented in a number of different ways. In one illustrative example, connection mechanism **134** may comprise structural element **138** having plurality of holes **140** and number of fasteners **142**. As used herein, a "plurality of" items means two or more items. For example, plurality of holes

140 means two or more holes. Further, as used herein, a “number of” items means one or more items. For example, number of fasteners **142** may be one or more items.

Structural element **138** is associated with structure **114** on second side **117** of structure **114**. In some cases, structural element **138** is considered part of structure **114**, while in other cases, structural element **138** is considered separate from structure **114**.

Number of fasteners **142** may be used to connect second end **132** of adjustment member **128** to second side **117** of structure **114** using one of plurality of holes **140**. Each hole in plurality of holes **140** may correspond to a different value for angle **126** between support member **120** and structure **114**. In other words, changing which hole in plurality of holes **140** through which adjustment member **128** is connected to structure **114** changes angle **126** between support member **120** and structure **114**.

In some illustrative examples, structural element **138** may have opening **144** instead of plurality of holes **140**. Further, connection mechanism **134** may also include sliding element **146** in these examples. Number of fasteners **142** may be used to connect second end **132** of adjustment member **128** to sliding element **146**. Sliding element **146** may be configured to move in a direction along an axis through opening **144**.

The position of sliding element **146** within opening **144** determines the value of angle **126** between support member **120** and structure **114**. In other words, moving sliding element **146** within opening **144** along the axis through opening **144** changes angle **126** between support member **120** and structure **114**.

In these illustrative examples, modular unit **110** may be positioned over environment surface **106** of environment **102**. The set of second ends of set of support members **116** may be attached to at least a portion of fastening elements **148** on environment surface **106** to secure modular unit **110** to environment surface **106**. For example, second end **124** of support member **120** may be configured to be attached to a corresponding fastening element of fastening elements **148** on environment surface **106**. Fastening elements **148** may comprise any number of different types of fastening elements. In one illustrative example, fastening elements **148** take the form of tie-down rings.

Fastening elements **148** may be associated with environment surface **106**. For example, without limitation, fastening elements **148** may be attached to environment

surface **106** at predefined locations. In some cases, fastening elements **148** may be part of environment surface **106** located at predefined locations on environment surface **106**.

5 In some cases, fastening elements **148** are variably spaced on environment surface **106**. For example, fastening elements **148** may be arranged on environment surface **106** in the form of a grid. However, while fastening elements **148** may be equally spaced with respect to the width of environment surface **106**, fastening elements **148** may be unequally spaced with respect to the length of environment surface **106**. For example, when environment **102** is aircraft interior **104**, fastening
10 elements **148** may be equally spaced across the width of aircraft interior **104** but unequally spaced along the length of aircraft interior **104**.

When modular unit **110** is attached to environment surface **106**, set of adjustment members **118** may be used to adjust the angle between one or more support members in set of support members **116** and structure **114**. Adjusting these
15 angles changes the position of the set of second ends of these support members.

For example, connection mechanism **134** may be used to change the connection between second end **132** of adjustment member **128** and second side **117** of structure **114**. Changing this connection changes angle **126** between support member **120** and structure **114**, thereby changing the position of second end **124** of support member **120**.
20 The position of second end **124** of support member **120** may be changed such that second end **124** may be attached to one of fastening elements **148**.

In this manner, the set of adjustment members for each modular unit in group of modular units **108** may be used to adjust the angle between one or more of the set of support members for each modular unit and the structure for each modular unit. These
25 angles may be adjusted to accommodate the variably spaced fastening elements **148** on environment surface **106** of environment **102**.

Group of modular units **108** may be attached to fastening elements **148** on environment surface **106** to form platform **100**. Platform **100** has platform surface **150**. In these illustrative examples, platform surface **150** is substantially planar within
30 selected tolerances. In some cases, the surface of the structure for each modular unit used to form platform **100** may be angled relative to the surfaces of the other structures for the other modular units to form platform **100** after attachment to fastening elements

148. However, the overall platform surface **150** formed by group of modular units **108** is substantially planar within selected tolerances.

For example, when adjustment member **128** in set of adjustment members **118** for modular unit **110** is used to adjust angle **126** between support member **120** and structure **114**, structure **114** may be angled relative to environment surface **106** in some cases. In particular, surface **119** of structure **114** may have an angular offset from environment surface **106**. However, in these illustrative examples, this angular offset may be within selected tolerances such that structure **114** may be considered substantially parallel to or level with respect to environment surface **106**.

Consequently, when the set of adjustment members for each modular unit in group of modular units **108** is used to adjust the angle between one or more of the set of support members for each modular unit and the structure for each modular unit, the surface of the structure for each modular unit may have an angular offset from environmental surface **106**. However, these angular offsets may be within selected tolerances such that platform surface **150** formed by connecting group of modular units **108** together is substantially planar and substantially parallel to environment surface **106** within selected tolerances.

Platform surface **150** provides an additional surface in environment **102** that is functional. For example, platform surface **150** may be used to support number of objects **152** placed on platform surface **150**. Number of objects **152** may include, for example, without limitation, a number of seats, a number of storage containers, a number of pallets, and/or or a number of other types of objects.

In this manner, the different illustrative embodiments provide an additional surface in aircraft interior **104** using platform **100**. This additional surface may be used for creating additional seating for passengers and for storing additional cargo. Platform **100** provides this additional surface without requiring changes to the structure and/or configuration of aircraft interior **104**.

In some cases, platform **100** may be configured for use in more than one environment. For example, the length of platform **100** may be changed to adapt to different environments by increasing and/or decreasing the number of modular units in group of modular units **108** assembled together to form platform **100**.

The illustration of platform **100** in **Figure 1** is not meant to imply physical or architectural limitations to the manner in which an illustrative embodiment may be

implemented. Other components in addition to or in place of the ones illustrated may be used. Some components may be unnecessary. Also, the blocks are presented to illustrate some functional components. One or more of these blocks may be combined, divided, or combined and divided into different blocks when implemented in an illustrative embodiment.

For example, modular unit **110** may include a set of secondary members in addition to set of adjustment members **128**. This set of secondary members may be, for example, a set of braces used to provide additional support for set of support members **116**. In some illustrative examples, structural element **138** of connection mechanism **134** may be connected to support member **120** instead of structure **114**.

In other illustrative examples, adjustment member **128** may be configured to connect to more than one support member in set of support members **116**. In these examples, adjustment member **128** may have one or more ends that are connected to second side **117** of structure **114** using one or more of set of connection mechanisms **136**. Changing these one or more connections of adjustment member **128** to structure **114** may change the angle between structure **114** and all of the support members connected to adjustment member **128**.

In still other illustrative examples, environment surface **106** of environment **102** may be a ceiling, a subfloor, or some other type of surface other than a floor of environment **102**. When environment surface **106** is a subfloor, the set of support members for each modular unit in group of modular units **108** may be attached to fastening elements **148** such that platform **100** hangs from the subfloor.

Further, in these examples, the surface of structure **114** at second side **117** of structure **114** may be substantially planar in addition to or in place of surface **119** of structure **114** at first side **115** of structure **114** being substantially planar. In this manner, when platform **100** hangs from the subfloor, platform surface **150** may be formed by the surfaces of the second sides of the structures for group of modular units **108**.

In some illustrative examples, environment surface **106** may not be substantially planar or substantially level. For example, in some cases, portions of environment surface **106** may be curved, angled, or raised, and/or different in some other manner relative to other portions of environment surface **106**. Further, in these cases, fastening elements **148** may not be located in predefined locations on environment surface **106**.

In these cases, the set of adjustment members for each modular unit in group of modular units **108** may be used to adjust the angle between one or more of the set of support members for each modular unit and the structure for each modular unit such that platform surface **150** formed by connecting group of modular units **108** together is substantially planar within selected tolerances. In particular, platform surface **150** may be substantially planar within selected tolerances even when platform surface **150** is not substantially parallel to environment surface **106**. Fastening elements **148** may be used to attach the set of support members for each modular unit to environment surface **106** at locations based on the adjustment of the set of adjustment members for each modular unit.

Turning now to **Figures 2-8**, illustrations of a modular unit are depicted in accordance with an illustrative embodiment. In **Figures 2-8**, modular unit **200** is an example of one implementation for modular unit **110** in **Figure 1**.

With reference now to **Figure 2**, an illustration of a top isometric view of modular unit **200** is depicted in accordance with an illustrative embodiment. As depicted, modular unit **200** comprises structure **202**, set of support members **204**, and set of braces **205**.

Structure **202** is an example of one implementation for structure **114** in **Figure 1**. Structure **202** has first side **206** and second side **208**. In this illustrative example, surface **210** of structure **202** at first side **206** of structure **202** is substantially planar. Further, structure **202** includes structural element **212** and structural element **214** in this example.

Set of support members **204** is an example of one implementation for set of support members **116** in **Figure 1**. Set of support members **204** is connected to structure **202** at second side **208** of structure **202**. Set of support members **204** includes support member **216**, support member **218**, support member **220**, and another support member (not shown in this view).

Further, set of braces **205** is an example of one implementation for set of adjustment members **118** in **Figure 1**. Set of braces **205** includes brace **222** and brace **224**. As depicted, brace **222** is connected to support member **216**. Although not shown in this view, brace **222** is also connected to second side **208** of structure **202**. Similarly, brace **224** is connected to support member **220**. Although not shown in this view, brace **224** is also connected to second side **208** of structure **202**.

In this illustrative example, modular unit **200** also includes set of secondary braces **225**. Set of secondary braces **225** includes secondary brace **226**, secondary brace **228**, secondary brace **230**, and another secondary brace (not shown in this view). In this manner, a secondary brace is attached to each of set of support members **204**.

5 Set of secondary braces **225** provide additional support for modular unit **200**.

With reference now to **Figure 3**, an illustration of a bottom isometric view of modular unit **200** is depicted in accordance with an illustrative embodiment. In this illustrative example, support member **300** belonging to set of support members **204** is seen in this view. Further, secondary brace **302** belonging to set of secondary braces
10 **225** is also seen in this view.

As depicted, structural elements **304** are associated with structure **202**. In some cases, structural elements **304** may be considered part of structure **202**. In this illustrative example, structural elements **304** include structural element **306** and structural element **308**. Brace **222** is connected to structural element **306** using
15 connection mechanism **310**. Further, brace **224** is connected to structural element **308** using connection mechanism **312**. Connection mechanism **310** and connection mechanism **312** are examples of one implementation for connection mechanism **134** in **Figure 1**.

Structural element **306** and structural element **308** may be considered part of
20 connection mechanism **310** and connection mechanism **312**, respectively, in this illustrative example. In this manner, connection mechanism **310** is used to connect brace **222** to second side **208** of structure **202** and connection mechanism **312** is used to connect brace **224** to second side **208** of structure **202**.

The connection between brace **224** and structure **202** is made within portion **314**
25 of modular unit **200**. Portion **314** of modular unit **200** and connection mechanism **312** are described in greater detail in **Figure 4** below.

With reference now to **Figure 4**, an illustration of an enlarged view of portion **314** of modular unit **200** from **Figure 3** is depicted in accordance with an illustrative embodiment. In this illustrative example, connection mechanism **312** includes structural
30 element **308** having holes **400** and fastener **412**. Holes **400** include hole **402**, hole **404**, hole **406**, hole **408**, and hole **410**.

Fastener **412** may be used to connect brace **224** to structural element **308** using one of holes **400**. Changing which of holes **400** is used to connect brace **224** to

structural element **308** changes the angle between support member **220** in **Figure 3** and structure **202**.

With reference now to **Figure 5**, an illustration of a cross-sectional side view of modular unit **200** is depicted in accordance with an illustrative embodiment. In particular, in **Figure 5**, a cross-sectional front view of modular unit **200** taken along lines 5-5 in **Figure 3** is depicted.

In this illustrative example, brace **224** has been connected to structural element **308** through hole **408**. This connection connects brace **224** to structure **202**. When brace **224** is connected to structure **202** through hole **408**, angle **500** is formed between support member **220** and structure **202**. In particular, angle **500** is formed between vertical axis **502** through support member **220** and plane **504** through structure **202**. With angle **500**, end **506** of support member **220** has position **508**.

With angle **500** and end **506** of support member **220** at position **508**, plane **504** through structure **202** may be at an angle relative to ground line **510**. However, this angle may be within selected tolerances such that plane **504** through structure **202** is substantially parallel to ground line **510**. Ground line **510** may be, for example, a representation of an environment surface on which modular unit **200** may be positioned.

Turning now to **Figure 6**, an illustration of a cross-sectional side view of modular unit **200** is depicted in accordance with an illustrative embodiment. In **Figure 6**, the cross-sectional side view of modular unit **200** from **Figure 5** is depicted.

In this illustrative example, brace **224** has been connected to structural element **308** through hole **410**. This connection connects brace **224** to structure **202**. When brace **224** is connected to structure **202** through hole **410**, angle **600** is formed between support member **220** and structure **202**. In particular, angle **600** is formed between vertical axis **502** through support member **220** and plane **504** through structure **202**.

Angle **600** is smaller than angle **500** in **Figure 5**. With angle **600**, end **506** of support member **220** has position **602**. Position **602** is different from position **508** of end **506** of support member **220** in **Figure 5**. In particular, position **602** of end **506** of support member **220** has been moved in the direction of arrow **604** relative to position **508** of end **506** of support member **220** in **Figure 5**.

With angle **600** and end **506** of support member **220** at position **602**, the angle of plane **504** through structure **202** with respect to ground line **510** in **Figure 6** may be different from the angle of plane **504** through structure **202** with respect to ground line

510 in **Figure 5**. However, this difference may be within selected tolerances such that plane **504** through structure **202** remains substantially parallel to ground line **510**.

Turning now to **Figure 7**, an illustration of a cross-sectional front view of modular unit **200** is depicted in accordance with an illustrative embodiment. In **Figure 7**, the cross-sectional front view of modular unit **200** from **Figure 5** is depicted.

In this illustrative example, brace **224** has been connected to structural element **308** through hole **402**. This connection connects brace **224** to structure **202**. When brace **224** is connected to structure **202** through hole **402**, angle **700** is formed between support member **220** and structure **202**. In particular, angle **700** is formed between vertical axis **502** through support member **220** and plane **504** through structure **202**.

Angle **700** is greater than angle **500** in **Figure 5**. With angle **700**, end **506** of support member **220** has position **702**. Position **702** is different from position **508** of end **506** of support member **220** in **Figure 5**. In particular, position **702** of end **506** of support member **220** has been moved in the direction of arrow **704** relative to position **508** of end **506** of support member **220** in **Figure 5**.

With angle **700** and end **506** of support member **220** at position **702**, the angle of plane **504** through structure **202** with respect to ground line **510** in **Figure 7** may be different from the angle of plane **504** through structure **202** with respect to ground line **510** in **Figure 5** or in **Figure 6**. However, this difference may be within selected tolerances such that plane **504** through structure **202** remains substantially parallel to ground line **510**.

With reference now to **Figure 8**, an illustration of a front view of modular unit **200** is depicted in accordance with an illustrative embodiment. In this illustrative example, set of secondary braces **225** may be more clearly seen.

Turning now to **Figures 9-12**, illustrations of two modular units connected together are depicted in accordance with an illustrative embodiment. In **Figures 9-12**, modular unit **200** is connected to modular unit **900**. Modular unit **900** may be another example of an implementation for a modular unit in group of modular units **108** in **Figure 1**.

With reference now to **Figure 9**, an illustration of a top isometric view of two modular units connected to each other is depicted in accordance with an illustrative embodiment. In this illustrative example, modular unit **900** has been connected to modular unit **200** from **Figures 2-8**.

As depicted, modular unit **900** has a configuration similar to modular unit **200**. For example, modular unit **900** comprises structure **902**, set of support members **904**, set of braces **905**, and set of secondary braces **907**. Structure **902** has first side **906** and second side **908**. Surface **910** of structure **902** at first side **906** of structure **902** is substantially planar in this illustrative example. Structure **902** also includes structural element **912** and structural element **914**.

In this illustrative example, set of support members **904** includes support member **916** and support member **918**. As depicted, set of support members **904** includes two fewer support members than set of support members **204** for modular unit **200**. Modular unit **900** may have had two additional support members (not shown in this view) that were physically removed from modular unit **900** prior to modular unit **900** being connected to modular unit **200**. Of course, in other illustrative examples, these additional support members may be folded into a stowed position within modular unit **900** when not being used.

Further, set of braces **905** includes brace **920** and brace **922**. Set of secondary braces **907** includes secondary brace **926** and secondary brace **928**.

In this illustrative example, modular unit **900** and modular unit **200** are connected to each other to form a partially assembled platform. In particular, structural element **212** of modular unit **200** is connected to structural element **912** of modular unit **900** and structural element **214** of modular unit **200** is connected to structural element **914** of modular unit **900** to connect these two modular units. Additional modular units are needed to fully assemble the platform. Connection **924** at which structure **902** of modular unit **900** is connected to structure **202** of modular unit **200** is described in greater detail in **Figure 11** below.

With reference now to **Figure 10**, an illustration of a bottom isometric view of two modular units connected to each other is depicted in accordance with an illustrative embodiment. In **Figure 10**, structural elements **1000** are associated with structure **902** of modular unit **900**.

Structural elements **1000** include structural element **1002** and structural element **1004**. Brace **920** is connected to structural element **1002** using connection mechanism **1006**. Brace **922** is connected to structural element **1004** using connection mechanism **1008**.

Structural element **1002** and structural element **1004** are considered part of connection mechanism **1006** and connection mechanism **1008**, respectively. Connection mechanism **1006** and connection mechanism **1008** are implemented in a manner similar to connection mechanism **310** and connection mechanism **312**, respectively, for modular unit **200**.

Turning now to **Figure 11**, an illustration of an enlarged view of connection **924** between modular unit **900** and modular unit **200** is depicted in accordance with an illustrative embodiment. As depicted, structural element **212** of modular unit **200** is connected to structural element **912** of modular unit **900**. In particular, fastener **1100** is used to connect these two structural elements together.

With reference now to **Figure 12**, an illustration of a cross-sectional side view of two modular units connected to each other is depicted in accordance with an illustrative embodiment. In **Figure 12**, a cross-sectional side view of modular unit **200** and modular unit **900** connected to each other taken along lines **12-12** in **Figure 10** is depicted.

As depicted, when modular unit **200** and modular unit **900** are connected together, plane **504** through structure **202** may have an angular offset relative to plane **1200** through structure **902**. However, this offset may be sufficiently small such that plane **504** through structure **202** and plane **1200** through structure **902** may be substantially parallel to each other within selected tolerances. In other words, the offset may be negligible such that surface **214** of structure **202** and surface **914** of structure **902** form a substantially planar surface within selected tolerances.

Turning now to **Figures 13-14**, illustrations of a platform are depicted in accordance with an illustrative embodiment. In **Figures 13-14**, platform **1302** is formed by group of modular units **1300**.

With reference now to **Figure 13**, an illustration of a fully assembled platform is depicted in accordance with an illustrative embodiment. In **Figure 13**, group of modular units **1300** have been connected to each other to form platform **1302**. Group of modular units **1300** includes modular unit **200** from **Figures 2-12**, modular unit **900** from **Figures 9-12**, modular unit **1304**, modular unit **1306**, modular unit **1308**, modular unit **1310**, and modular unit **1312**.

In this illustrative example, platform **1302** has been assembled on environment surface **1316** within environment **1318**. Environment **1318** may be the interior of an

aircraft in this example. Platform **1302** is attached to fastening elements **1320** on environment surface **1316**. These fastening elements may be, for example, without limitation, tie-down rings.

5 In this illustrative example, the spacing of fastening elements **1320** on environment surface **1316** in the direction of axis **1322** may be unequal. Consequently, the different braces on the modular units in group of modular units **1300** are used to adjust the positions of the ends of the different support members on the modular units to accommodate the variably spaced fastening elements **1320**. In particular, a position of an end of a support member may be adjusted such that the end is positioned is at a
10 location of a fastening element.

As depicted, platform **1302** has platform surface **1314**. Platform surface **1314** is substantially planar within selected tolerances. Platform surface **1314** provides a surface for transporting cargo and/or personnel in addition to environment surface **1316**. For example, crew members of the aircraft may use ladder **1324** and/or ladder **1326** to
15 reach platform surface **1314** to install additional seating on platform surface **1314** or store cargo on platform surface **1314**.

Turning now to **Figure 14**, an illustration of platform **1302** being used for additional seating and cargo within environment **1318** is depicted in accordance with an illustrative embodiment. As depicted, seating system **1400** has been installed in
20 environment **1318**. Seating system **1400** includes first group of seats **1402** and second group of seats **1404**. First group of seats **1402** have been attached to environment surface **1316**. Second group of seats **1404** have been attached to platform surface **1314** of platform **1302**.

Further, platform **1302** is also used for storing cargo **1406**. In particular, cargo
25 **1406** has been placed on platform surface **1314**.

With reference now to **Figure 15**, an illustration of modular unit **200** being folded into a compact configuration is depicted in accordance with an illustrative embodiment. As depicted, set of support members **204** may be folded into a stowed position within modular unit **200**. Further, set of braces **205** and set of secondary braces **225** may also
30 be folded into a stowed position within modular unit **200**.

Modular unit **200** may be folded in the direction of arrow **1500** such that modular unit **200** has a compact configuration. This type of compact configuration may allow

modular unit **200** and other similar modular units be more easily stored, moved, carried, and/or otherwise manipulated.

5 The illustrations of modular unit **200** in **Figures 2-15**, modular unit **900** in **Figures 9-14**, and platform **1302** in **Figures 13-14** are not meant to imply physical or architectural limitations to the manner in which an illustrative embodiment may be implemented. Other components in addition to or in place of the ones illustrated may be used. Some components may be optional.

10 The different components shown in **Figures 2-14** may be combined with components in **Figure 1**, used with components in **Figure 1**, or a combination of the two. Additionally, some of the components in **Figures 2-14** may be illustrative examples of how components shown in block form in **Figure 1** can be implemented as physical structures.

15 With reference now to **Figure 16**, an illustration of a process for assembling a platform is depicted in accordance with an illustrative embodiment. The process illustrated in **Figure 16** may be performed to assemble a platform, such as, for example, platform **100** in **Figure 1** and/or platform **1302** in **Figures 13-14**.

20 The process begins by positioning a modular unit relative to a surface of an environment (operation **1600**). The modular unit may be implemented using, for example, modular unit **110** in **Figure 1**. The modular unit comprises a structure, a set of support members, and a set of adjustment members.

25 The process then adjusts an angle between a support member in the set of support members and the structure using an adjustment member in the set of adjustment members associated with the support member (operation **1602**). Operation **1602** may be performed such that an end of the support member is positioned at the location of a fastening element on the surface of the environment. Further, operation **1602** may be performed using a connection mechanism, such as connection mechanism **134** in **Figure 1**.

30 Thereafter, the process attaches the support member to the surface of the environment (operation **1604**). The process then determines whether the positions of the ends of any additional support members need to be adjusted (operation **1606**). If the positions of the ends of additional support members need to be adjusted, the process returns to operation **1602** as described above.

Otherwise, the process determines whether any additional modular units are needed for the platform (operation **1608**). If additional modular units are not needed, the process terminates. Otherwise, the process proceeds to operation **1600** as described above.

5 The flowcharts and block diagrams in the different depicted embodiments illustrate the architecture, functionality, and operation of some possible implementations of apparatus and methods in an illustrative embodiment. In this regard, each block in the flowcharts or block diagrams may represent a module, segment, function, and/or a portion of an operation or step. For example, one or more of the blocks may be
10 implemented as program code, in hardware, or a combination of the program code and hardware. When implemented in hardware, the hardware may, for example, take the form of integrated circuits that are manufactured or configured to perform one or more operations in the flowcharts or block diagrams.

 In some alternative implementations of an illustrative embodiment, the function or
15 functions noted in the blocks may occur out of the order noted in the figures. For example, in some cases, two blocks shown in succession may be executed substantially concurrently, or the blocks may sometimes be performed in the reverse order, depending upon the functionality involved. Also, other blocks may be added in addition to the illustrated blocks in a flowchart or block diagram

20 Illustrative embodiments of the disclosure may be described in the context of aircraft manufacturing and service method **1700** as shown in **Figure 17** and aircraft **1800** as shown in **Figure 18**. Turning first to **Figure 17**, an illustration of an aircraft manufacturing and service method is depicted in accordance with an illustrative embodiment. During pre-production, aircraft manufacturing and service method **1700**
25 may include specification and design **1702** of aircraft **1800** in **Figure 18** and material procurement **1704**.

 During production, component and subassembly manufacturing **1706** and system integration **1708** of aircraft **1800** in **Figure 18** takes place. Thereafter, aircraft **1800** in **Figure 18** may go through certification and delivery **1710** in order to be placed in
30 service **1712**. While in service **1712** by a customer, aircraft **1800** in **Figure 18** is scheduled for routine maintenance and service **1714**, which may include modification, reconfiguration, refurbishment, and other maintenance or service.

Each of the processes of aircraft manufacturing and service method **1700** may be performed or carried out by a system integrator, a third party, and/or an operator. In these examples, the operator may be a customer. For the purposes of this description, a system integrator may include, without limitation, any number of aircraft
5 manufacturers and major-system subcontractors; a third party may include, without limitation, any number of vendors, subcontractors, and suppliers; and an operator may be an airline, a leasing company, a military entity, a service organization, and so on.

With reference now to **Figure 18**, an illustration of an aircraft in the form of a block diagram is depicted in which an illustrative embodiment may be implemented. In
10 this example, aircraft **1800** is produced by aircraft manufacturing and service method **1700** in **Figure 17** and may include airframe **1802** with plurality of systems **1804** and interior **1806**. Examples of systems **1804** include one or more of propulsion system **1808**, electrical system **1810**, hydraulic system **1812**, and environmental system **1814**. Any number of other systems may be included. Although an aerospace example is
15 shown, different illustrative embodiments may be applied to other industries, such as the automotive industry.

Apparatuses and methods embodied herein may be employed during at least one of the stages of aircraft manufacturing and service method **1700** in **Figure 17**. For example, platform **100** may be installed in aircraft **1800** during production, component
20 and subassembly manufacturing **1706**, during system integration **1708**, while in service **1712**, and/or during routine maintenance and service **1714**. In particular, platform **100** may be installed in aircraft **1800** without requiring any modifications to the existing configuration or structure of aircraft **1800**.

In one illustrative example, components or subassemblies produced in
25 component and subassembly manufacturing **1706** in **Figure 17** may be fabricated or manufactured in a manner similar to components or subassemblies produced while aircraft **1800** is in service **1712** in **Figure 17**. As yet another example, one or more apparatus embodiments, method embodiments, or a combination thereof may be utilized during production stages, such as component and subassembly manufacturing
30 **1706** and system integration **1708** in **Figure 17**. One or more apparatus embodiments, method embodiments, or a combination thereof may be utilized while aircraft **1800** is in service **1712** and/or during maintenance and service **1714** in **Figure 17**. The use of a

number of the different illustrative embodiments may substantially expedite the assembly of and/or reduce the cost of aircraft **1800**.

Thus, the different illustrative embodiments provide a platform configured to provide an additional surface within the interior of a transport aircraft. In another
5 illustrative embodiment, a platform comprises a group of modular units connected to each other and a platform surface. Each modular unit in the group of modular units comprises a structure, a set of support members associated with the structure, and a set of adjustment members. An adjustment member in the set of adjustment members is associated with a corresponding support member in the set of support members. The
10 adjustment member is configured to adjust an angle between the corresponding support member and the structure. The platform surface is formed by the group of modular units and is substantially planar within selected tolerances.

In this manner, the different illustrative embodiments provide a platform configured to provide an additional surface without requiring changes to the existing
15 configuration of the transport aircraft and/or changes to the structure of the transport aircraft. Further, the platform has adjustable support members that are configured to accommodate predefined locations for fastening elements that are variably spaced on the floor of an aircraft.

The description of the different illustrative embodiments has been presented for
20 purposes of illustration and description, and is not intended to be exhaustive or limited to the embodiments in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. Further, different illustrative embodiments may provide different features as compared to other illustrative embodiments. The embodiment or embodiments selected are chosen and described in order to best
25 explain the principles of the embodiments, the practical application, and to enable others of ordinary skill in the art to understand the disclosure for various embodiments with various modifications as are suited to the particular use contemplated.

CLAIMS:

What is claimed is:

- 5 1. An apparatus comprising:
 a structure (114);
 a set of support members (116) associated with the structure (114); and
 a set of adjustment members (118) in which an adjustment member (128) in the
10 set of adjustment members (118) is associated with a corresponding support member in
the set of support members (116) and is configured to adjust an angle (126) between
the corresponding support member and the structure (114).
2. The apparatus of claim 1, wherein the structure (114), the set of support
members (116), and the set of adjustment members (118) form a modular unit (110) in
15 which the modular unit (110) is one of a group of modular units (108) configured to form
a platform (100).
3. The apparatus of claims 1 or 2, wherein the structure (114) comprises:
 a first side (115) in which a surface (119) of the structure (114) at the first side
20 (115) of the structure (114) is substantially planar; and
 a second side (117) in which the set of support members (116) is associated with
the structure (114) at the second side (117) of the structure (114).
4. The apparatus of any of the preceding claims further comprising:
25 a set of connection mechanisms (136) in which a connection mechanism (134) in
the set of connection mechanisms (136) is configured to connect a corresponding
adjustment member (128) in the set of adjustment members (118) to the structure (114).
5. The apparatus of claim 4, wherein the connection mechanism (134) comprises:
30 a structural element (138) having a plurality of holes (140); and
 a number of fasteners (142) configured to connect the corresponding adjustment
member (128) to a hole in the plurality of holes (140), wherein each hole in the plurality
of holes (140) corresponds to a different value for an angle between the structure (114)

and the corresponding support member with which the corresponding adjustment member (128) is associated.

6. The apparatus of claims 4 or 5, wherein the connection mechanism (134) comprises:

a structural element (138) having an opening (144); and

a sliding element (146) configured to move in a direction along an axis within the opening (144) of the structure (114), wherein a position of the sliding element (146) within the opening (144) of the structure (114) determines the angle (126) between the structure (114) and the corresponding support member with which the corresponding adjustment member (128) is associated; and

a number of fasteners (142) configured to connect the corresponding adjustment member (128) to the sliding element (146).

7. The apparatus of any of claims 1 through 3, wherein the structure (114) is a first structure, the set of support members (116) is a first set of support members, and the set of adjustment members (118) is a first set of adjustment members and further comprising:

a second structure;

a second set of support members associated with the second structure; and

a second set of adjustment members in which an adjustment member (128) in the second set of adjustment members is associated with a corresponding support member in the second set of support members and configured to adjust an angle (126) between the corresponding support member and the second structure.

8. The apparatus of any of claims 1, 2, 3, and 7, wherein a support member (120) in the set of support members (116) is configured to be attached to a corresponding fastening element on an environment surface (106) of an environment (102).

9. The apparatus of claim 8, wherein the environment (102) is selected from one of an interior of an aircraft, an interior of a space shuttle, an interior of a ship, an area on a deck of a ship, a storage space, and an interior of a container.

10. A method for assembling a platform (100), the method comprising:

positioning a modular unit (110) relative to an environment surface (106) of an environment (102), wherein the modular unit (110) comprises a structure (114), a set of support members (116) associated with the structure (114), and a set of adjustment members (118);

adjusting an angle (126) between a support member (120) in the set of support members (116) and the structure (114) using an adjustment member (128) in the set of adjustment members (118) associated with the support member (120); and

attaching the support member (120) to the environment surface (106) of the environment (102).

11. The method of claim 10, wherein the step of adjusting the angle (126) between the support member (120) in the set of support members (116) and the structure (114) using the adjustment member (128) in the set of adjustment members (118) associated with the support member (120) comprises:

adjusting the angle (126) between the support member (120) in the set of support members (116) and the structure (114) using the adjustment member (128) in the set of adjustment members (118) associated with the support member (120) such that an end of the support member (120) is positioned at a location of a fastening element on the environment surface (106) of the environment (102).

12. The method of claim 11, wherein the step of adjusting the angle (126) between the support member (120) in the set of support members (116) and the structure (114) using the adjustment member (128) in the set of adjustment members (118) associated with the support member (120) comprises:

adjusting the angle (126) between the support member (120) in the set of support members (116) and the structure (114) using the adjustment member (128) in the set of adjustment members (118) associated with the support member (120) and a connection mechanism (134) in which the connection mechanism (134) is configured to connect the adjustment member (128) to the structure (114).

13. The method of claims 10 or 11, wherein the modular unit (110) is a first modular unit, the set of support members (116) is a first set of support members, and the set of adjustment members (118) is a first set of adjustment members and further comprising:

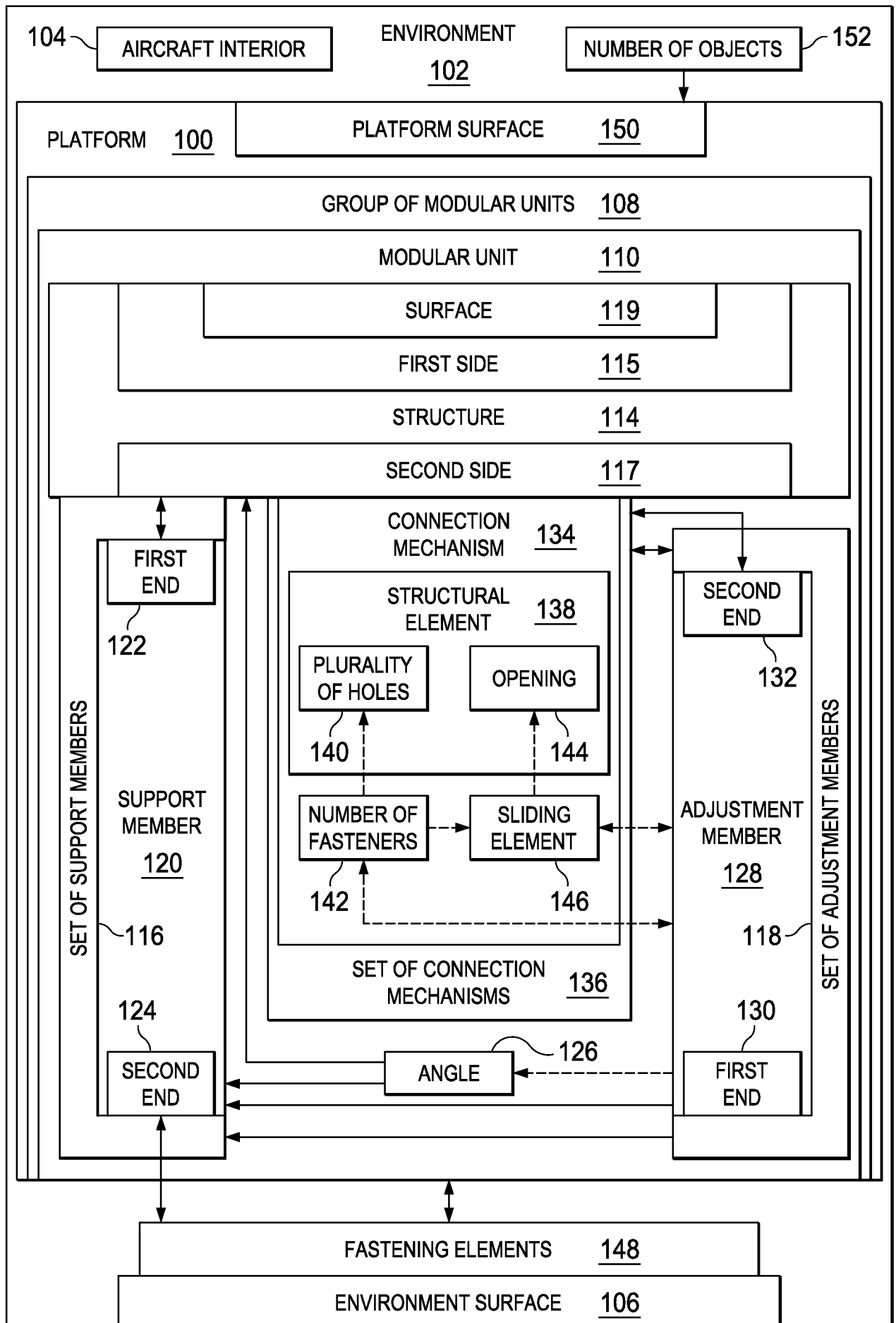
connecting a second modular unit to the first modular unit to form the platform (100), wherein the second modular unit comprises a second structure, a second set of support members associated with the structure (114), and a second set of adjustment members;

adjusting an angle (126) between a support member (120) in the second set of support members and the second structure using an adjustment member (128) in the second set of adjustment members associated with the support member (120) in the second set of support members, wherein the platform (100) has a platform surface (150) that is substantially planar within selected tolerances; and

attaching the support member (120) in the second set of support members to the environment surface (106) of the environment (102), wherein the platform surface (150) is substantially parallel to the environment surface (106) within selected tolerances.

FIG. 1

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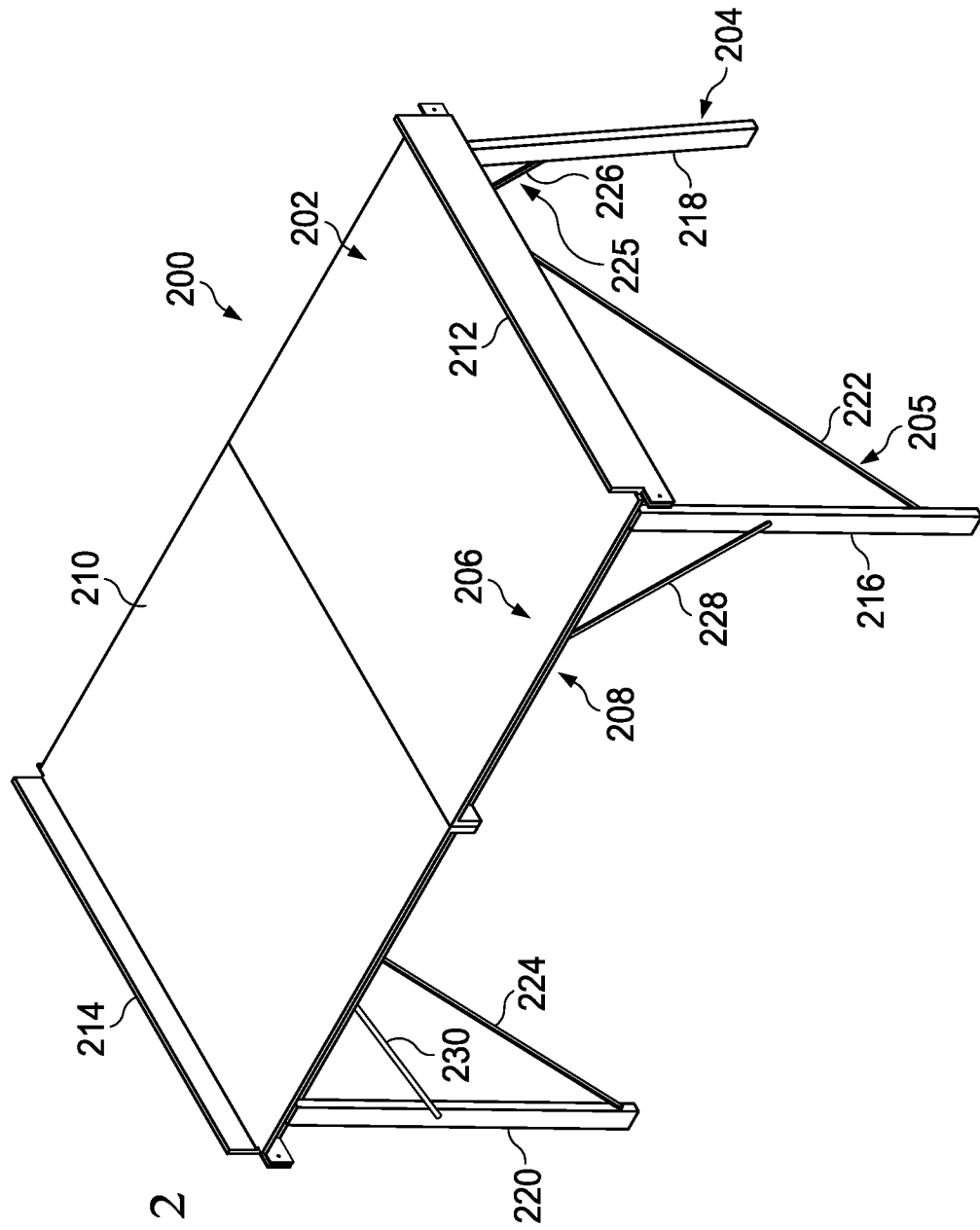
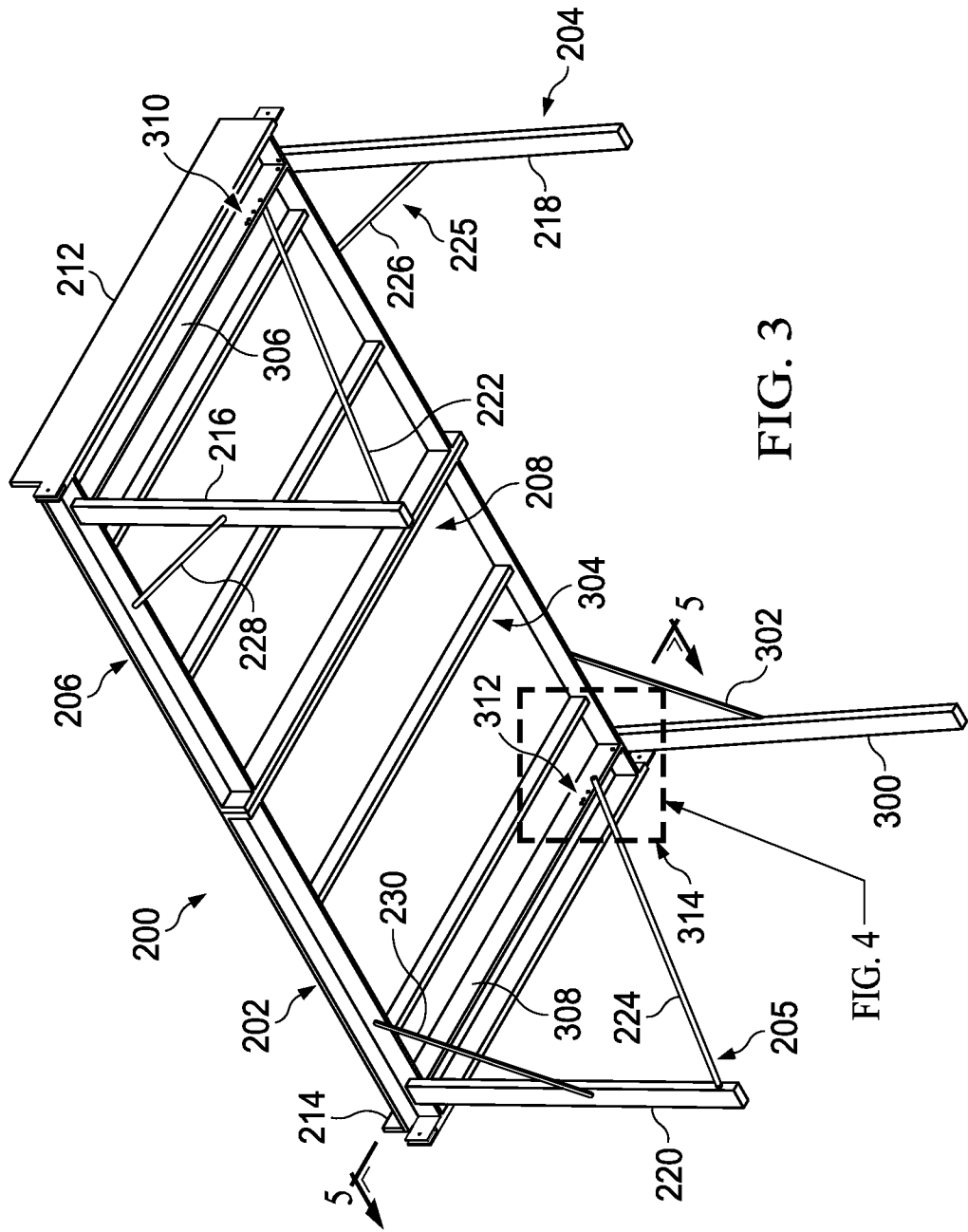


FIG. 2



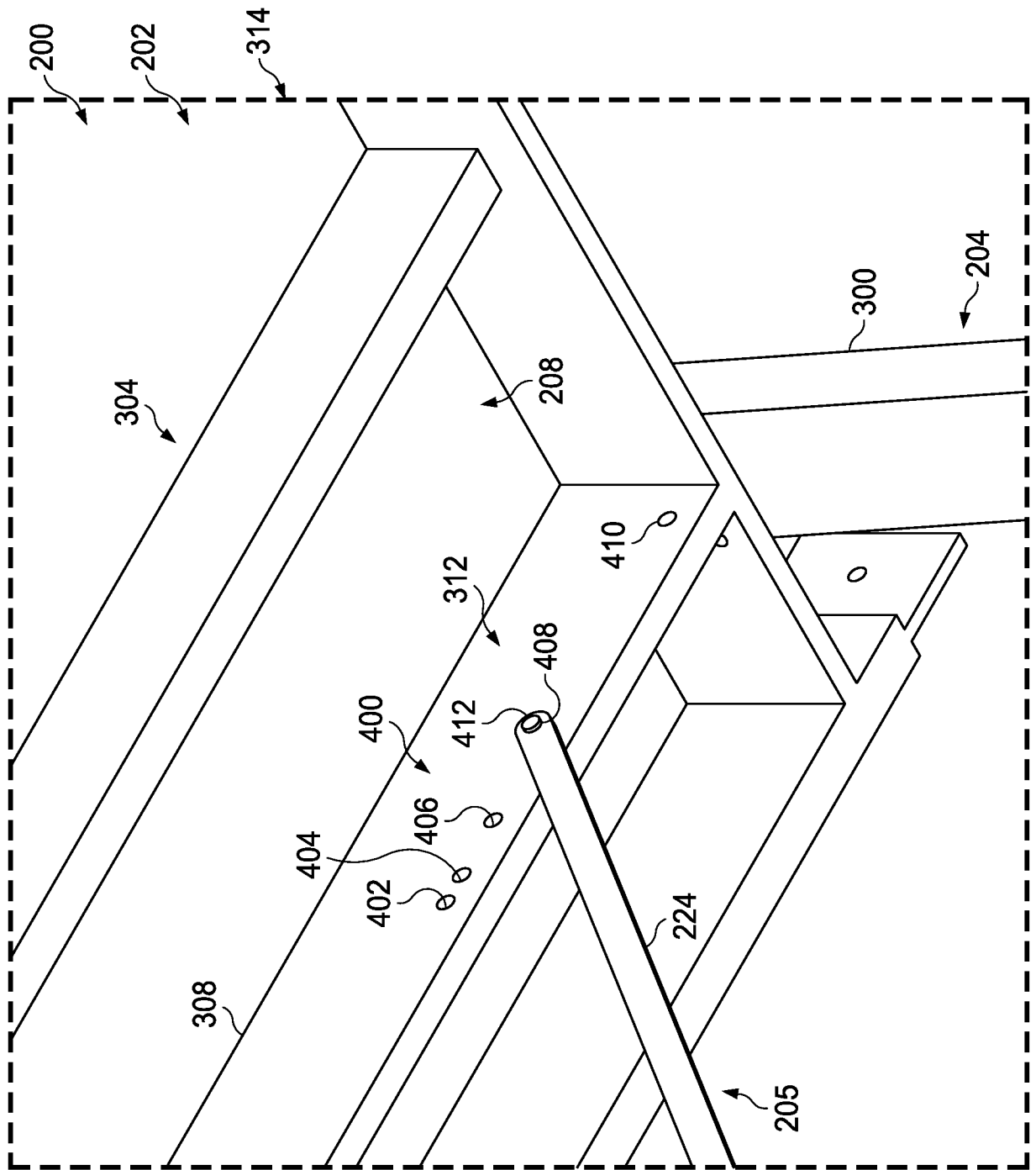
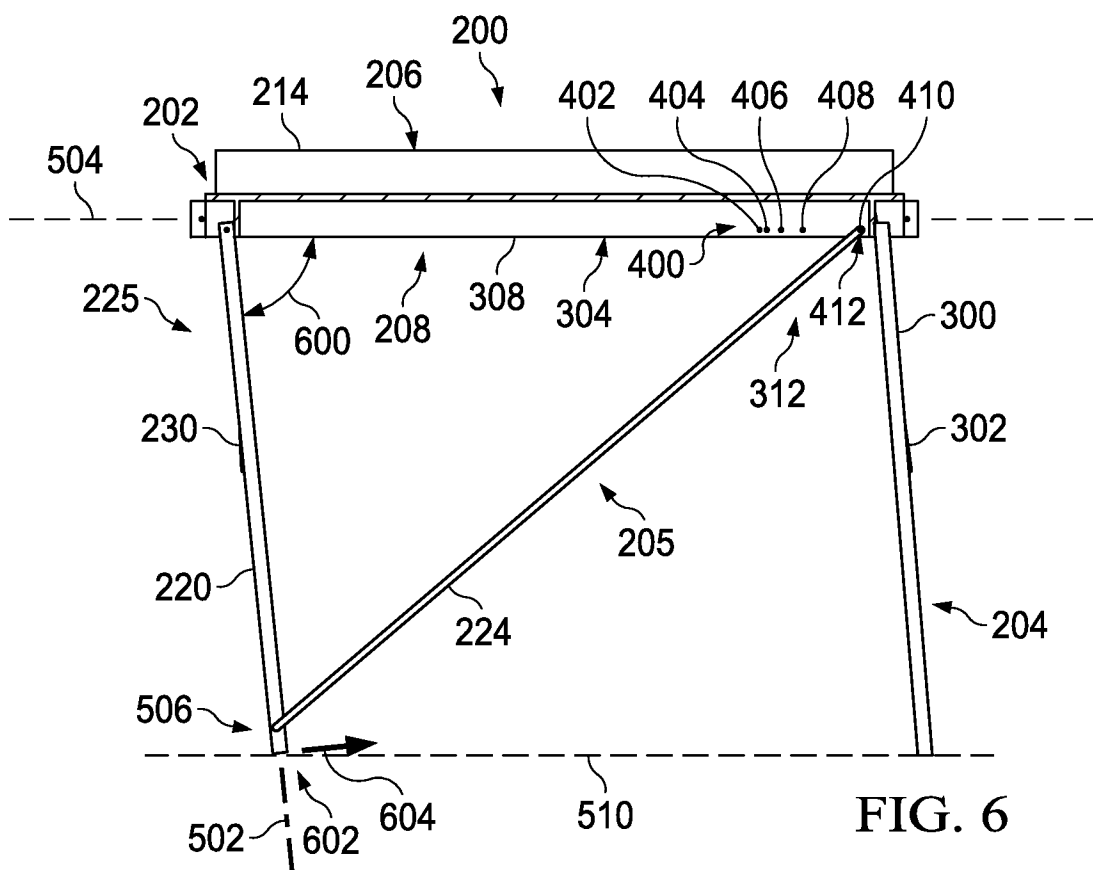
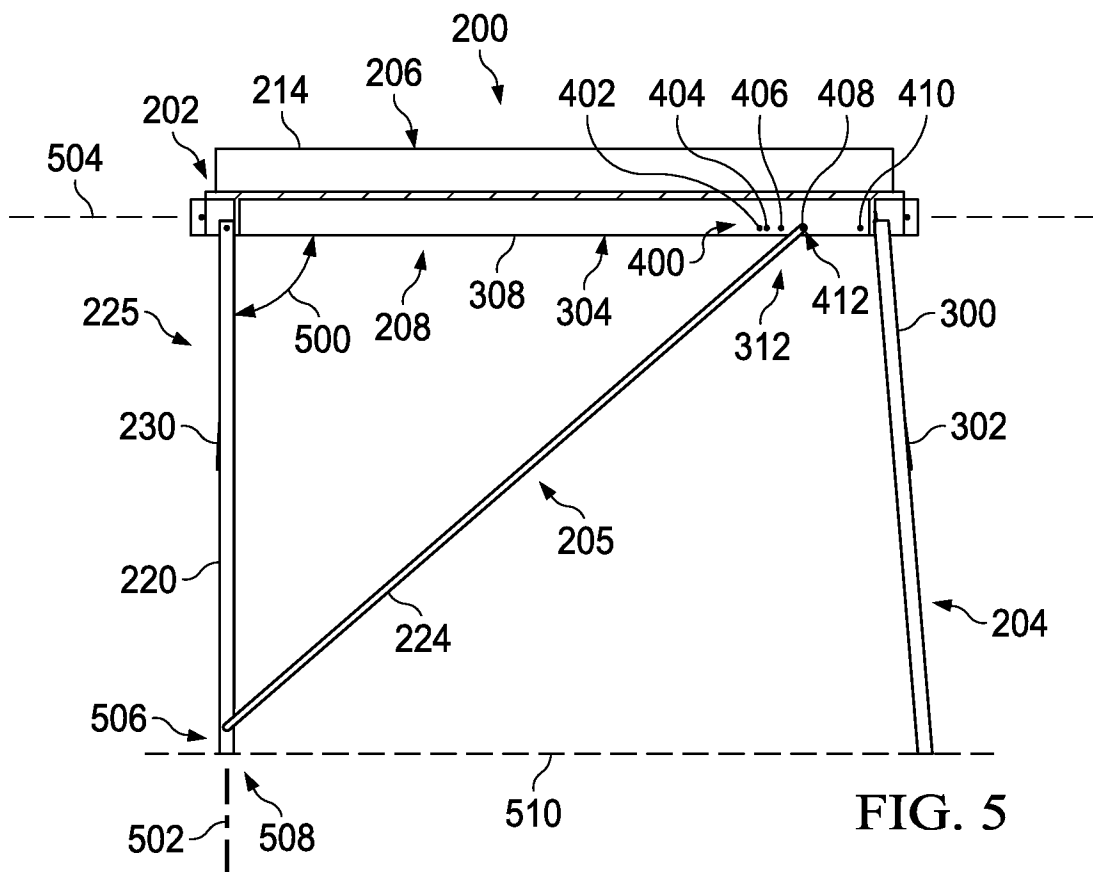
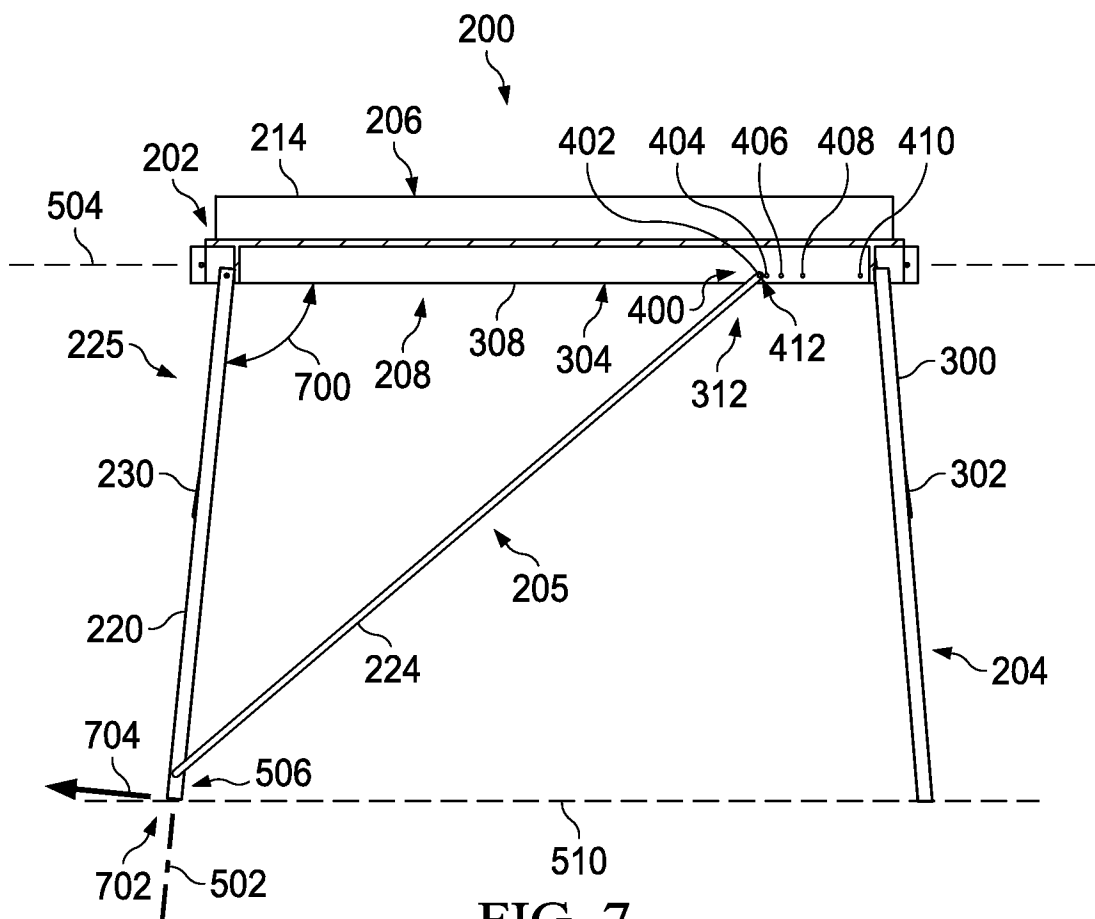


FIG. 4

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FIG. 8

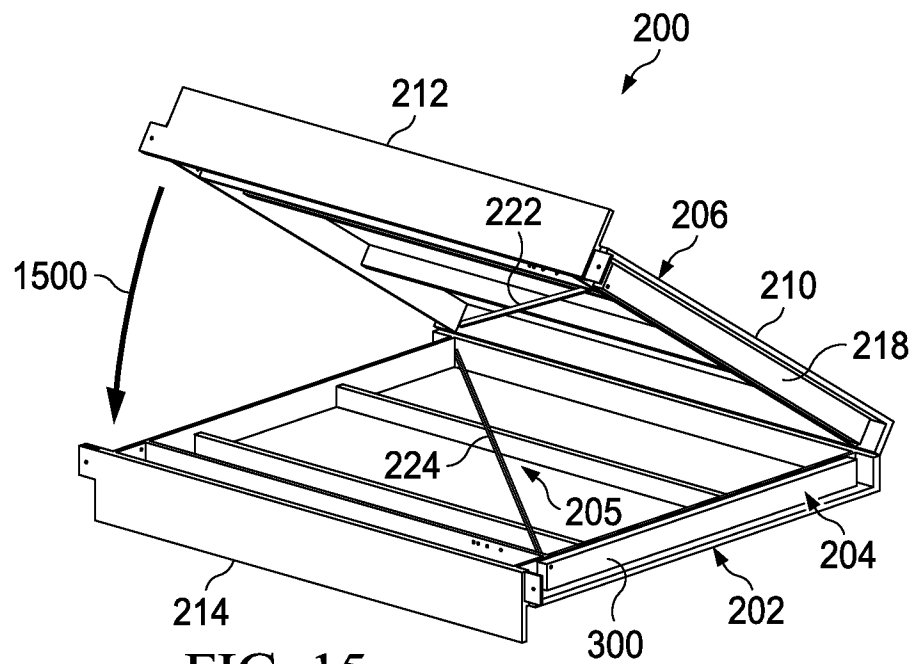
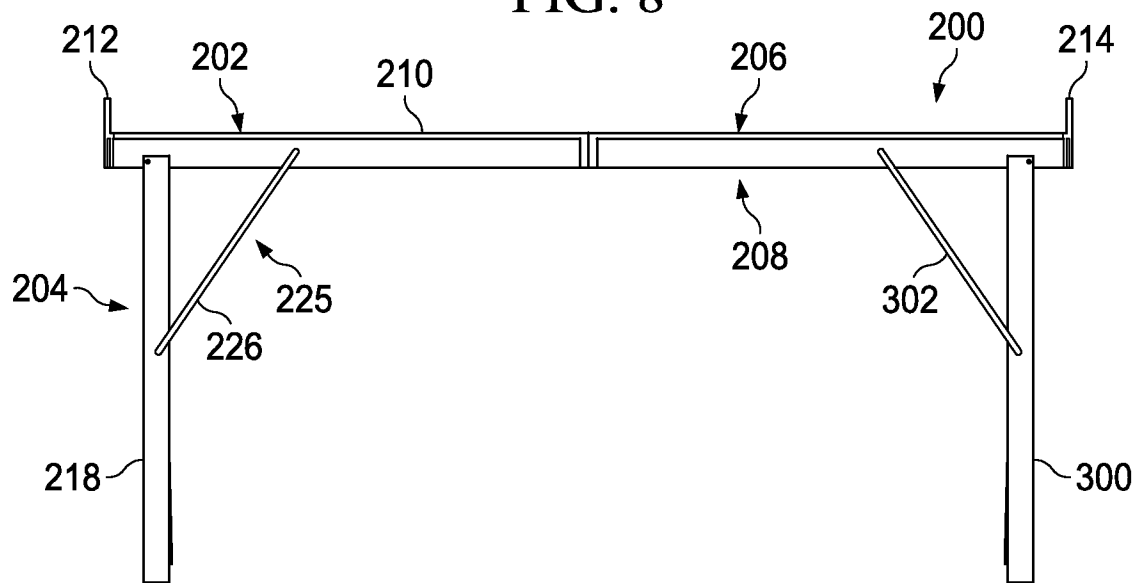
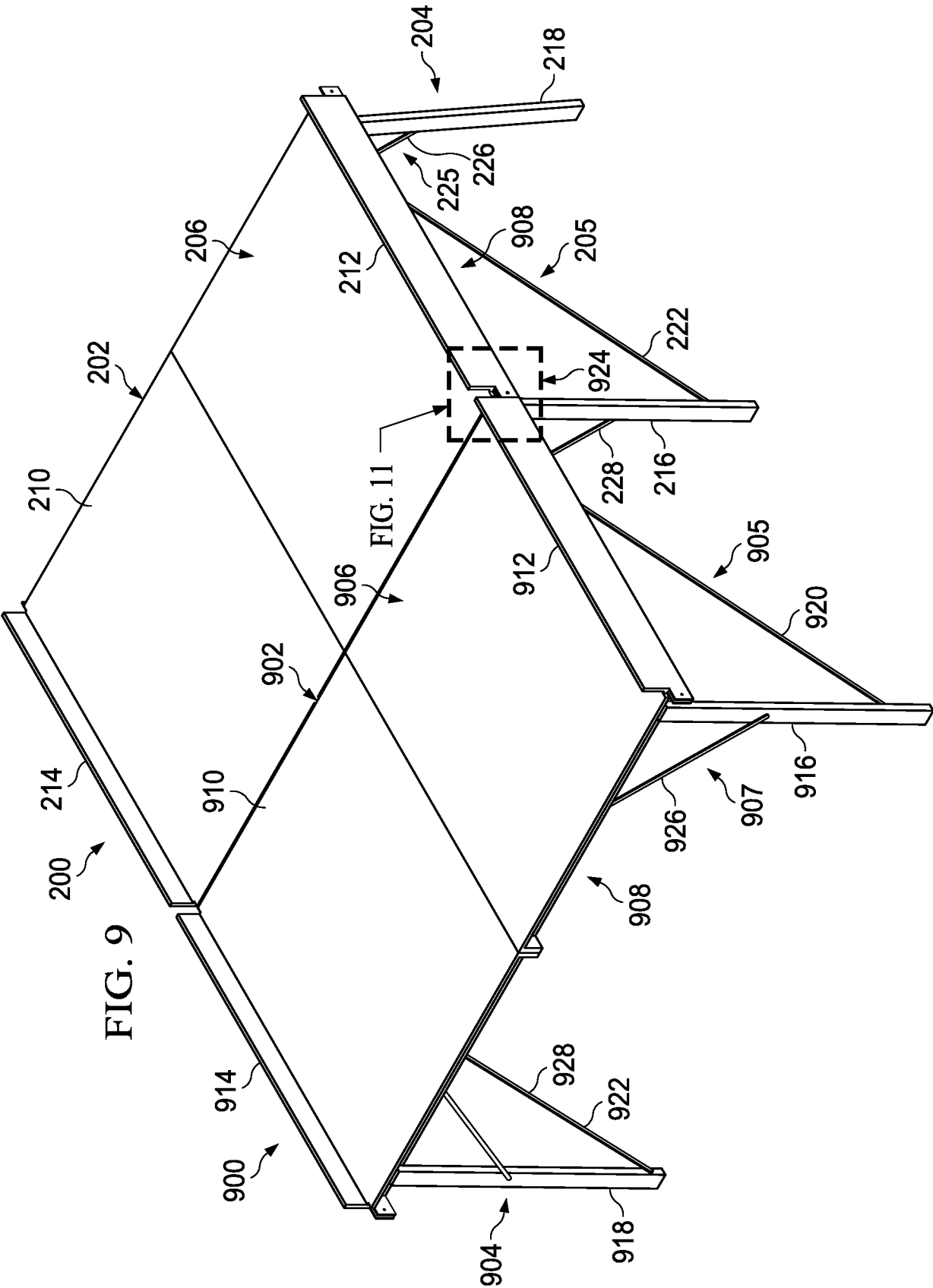
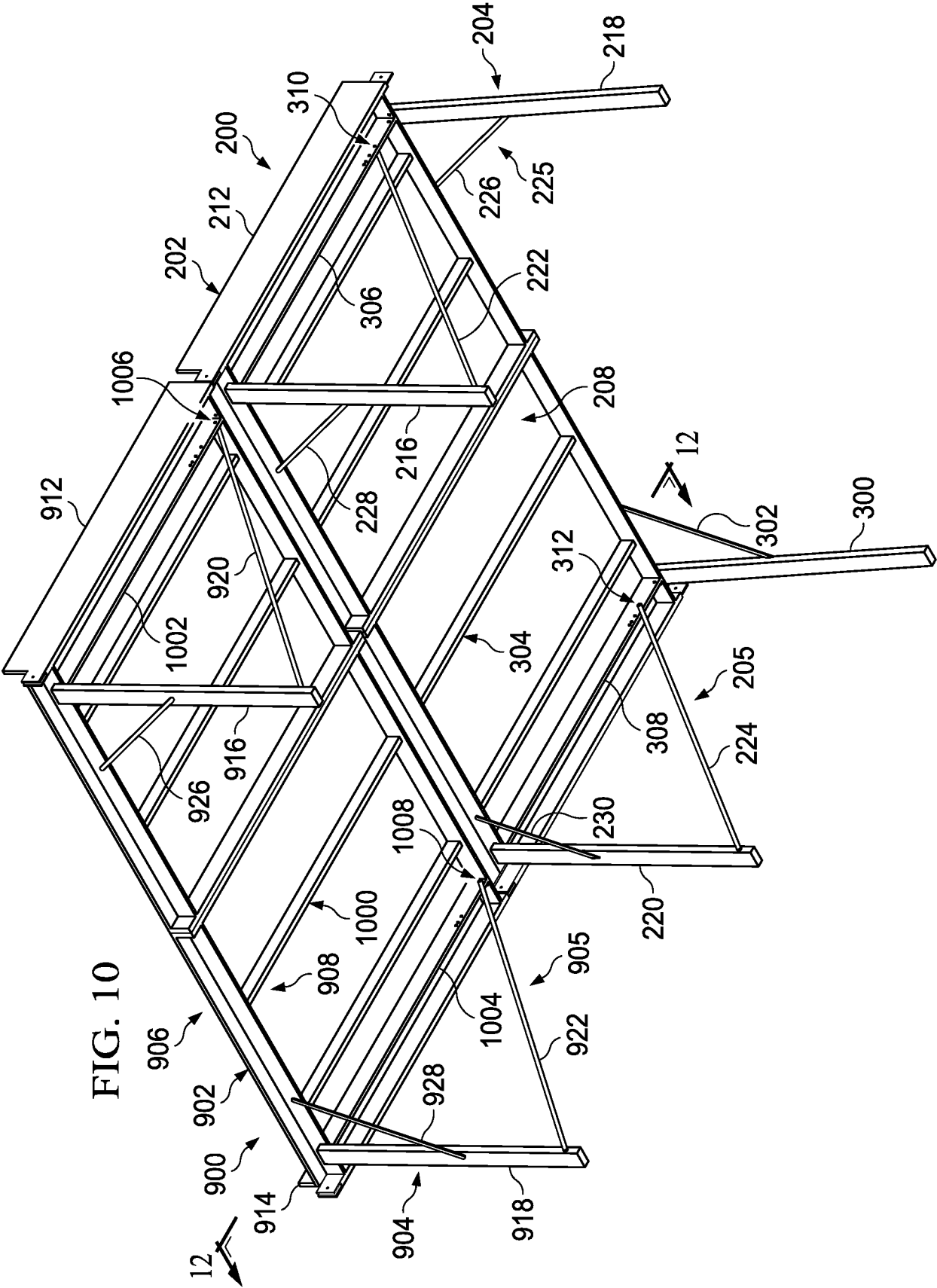
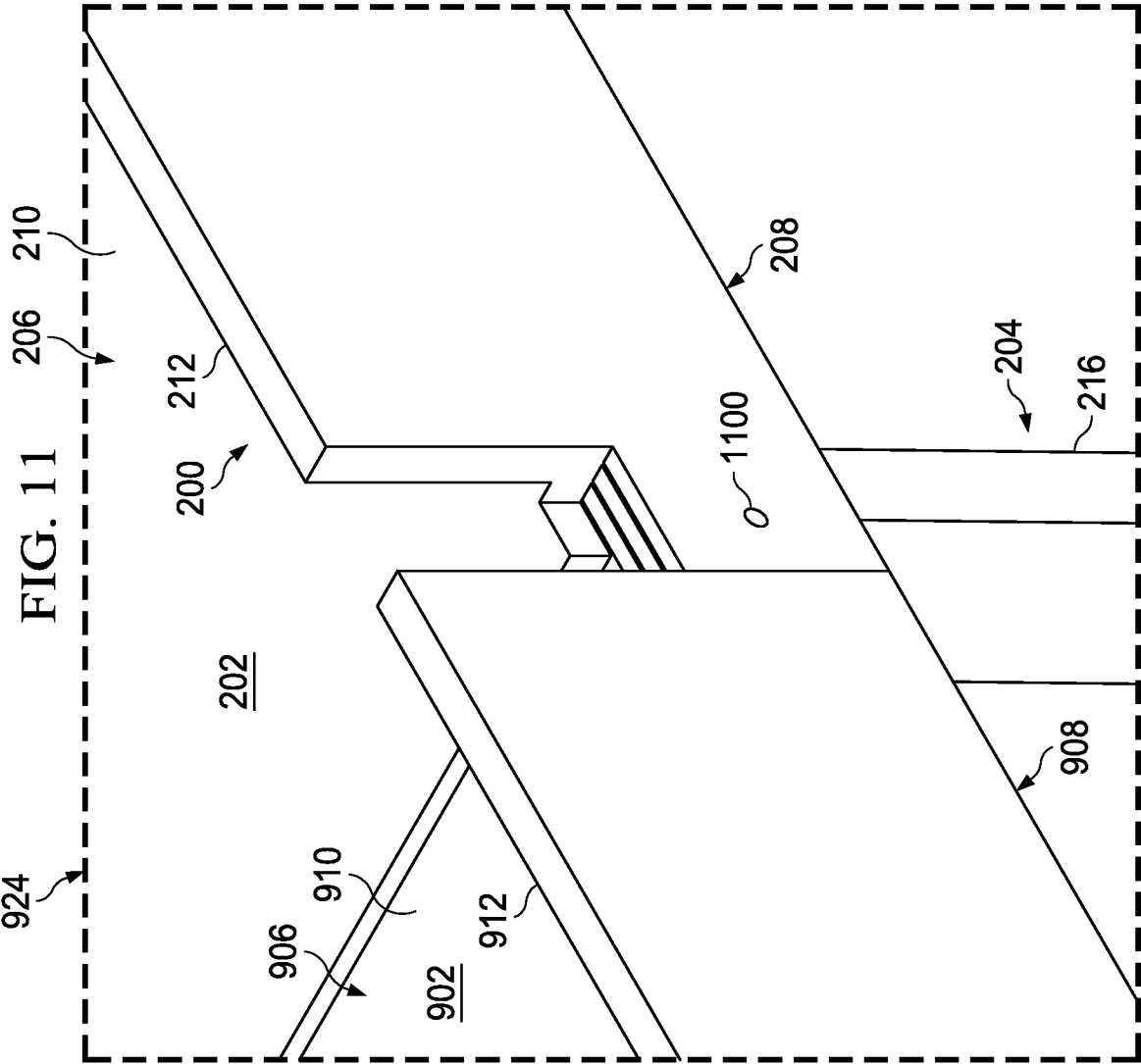
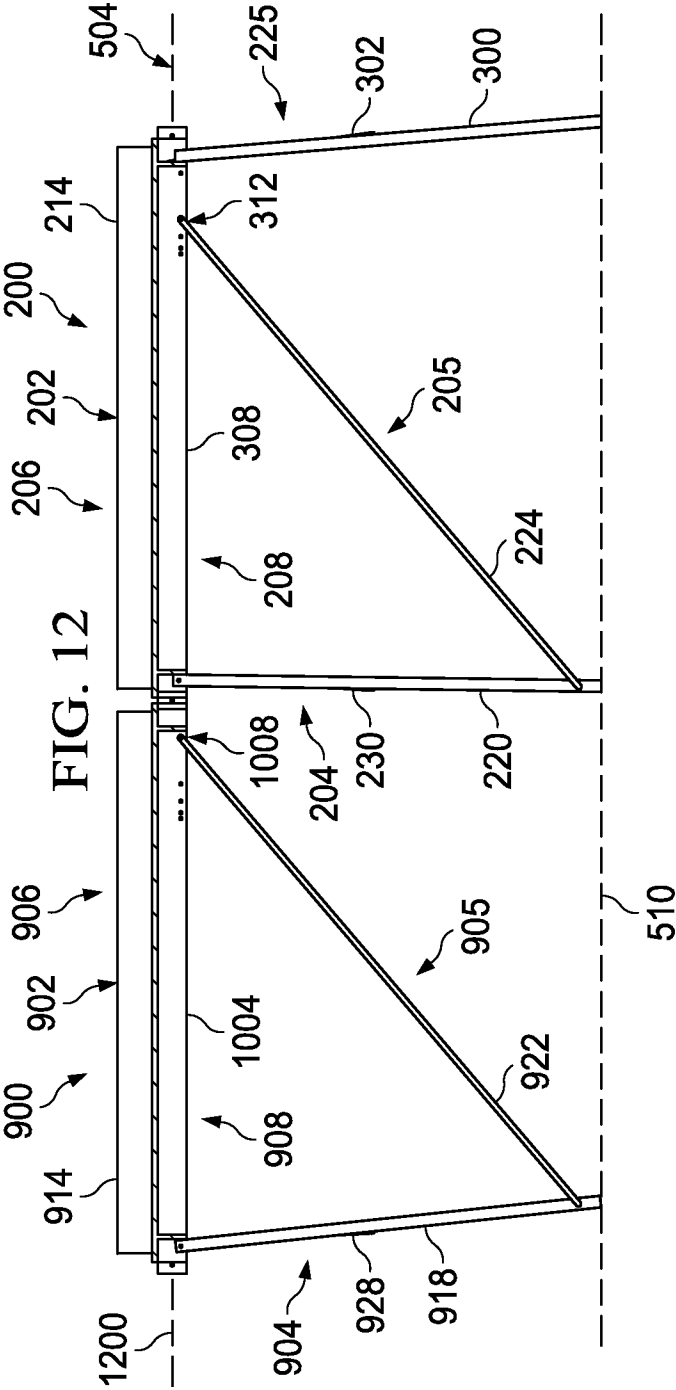


FIG. 15









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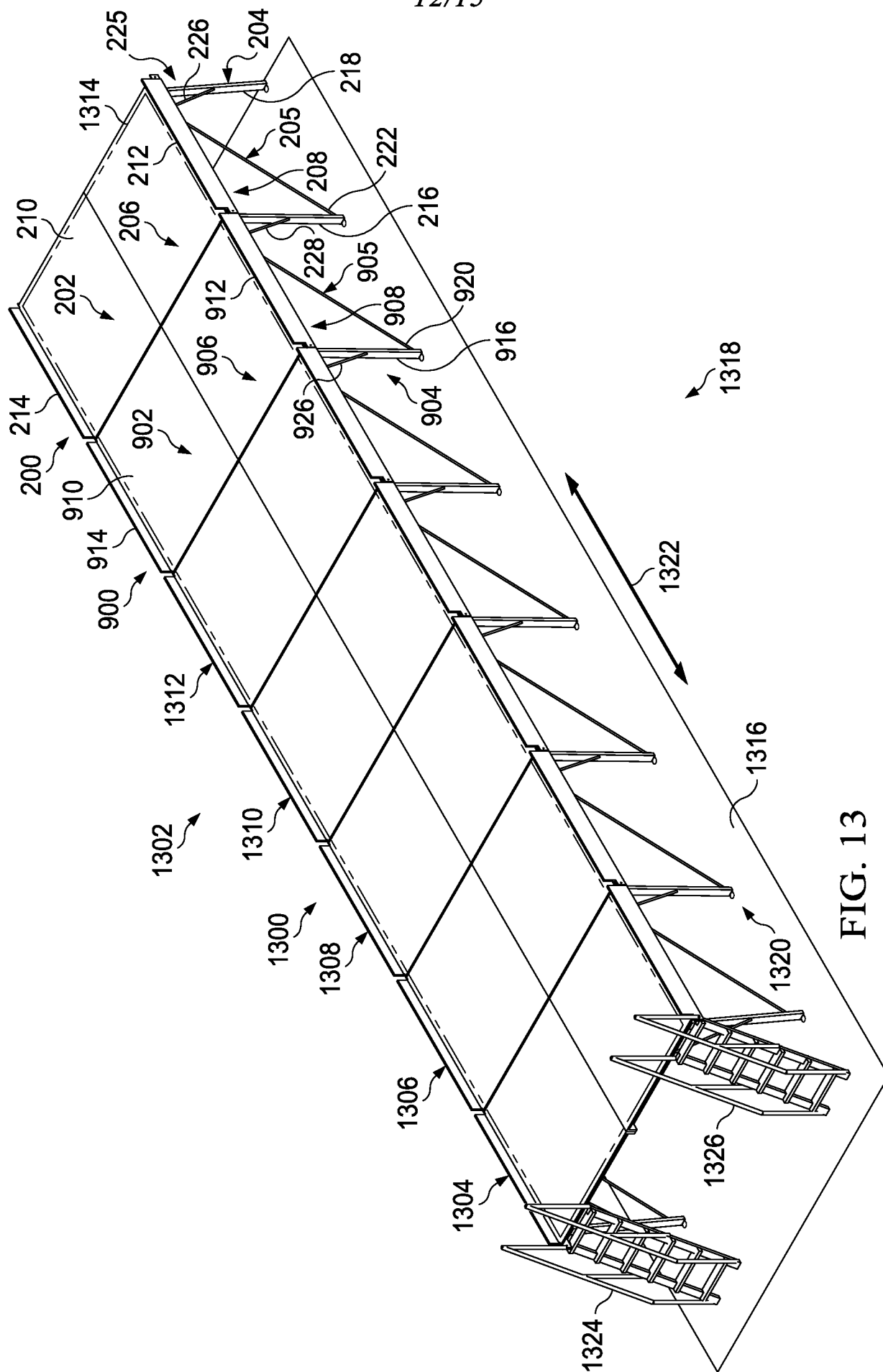


FIG. 13

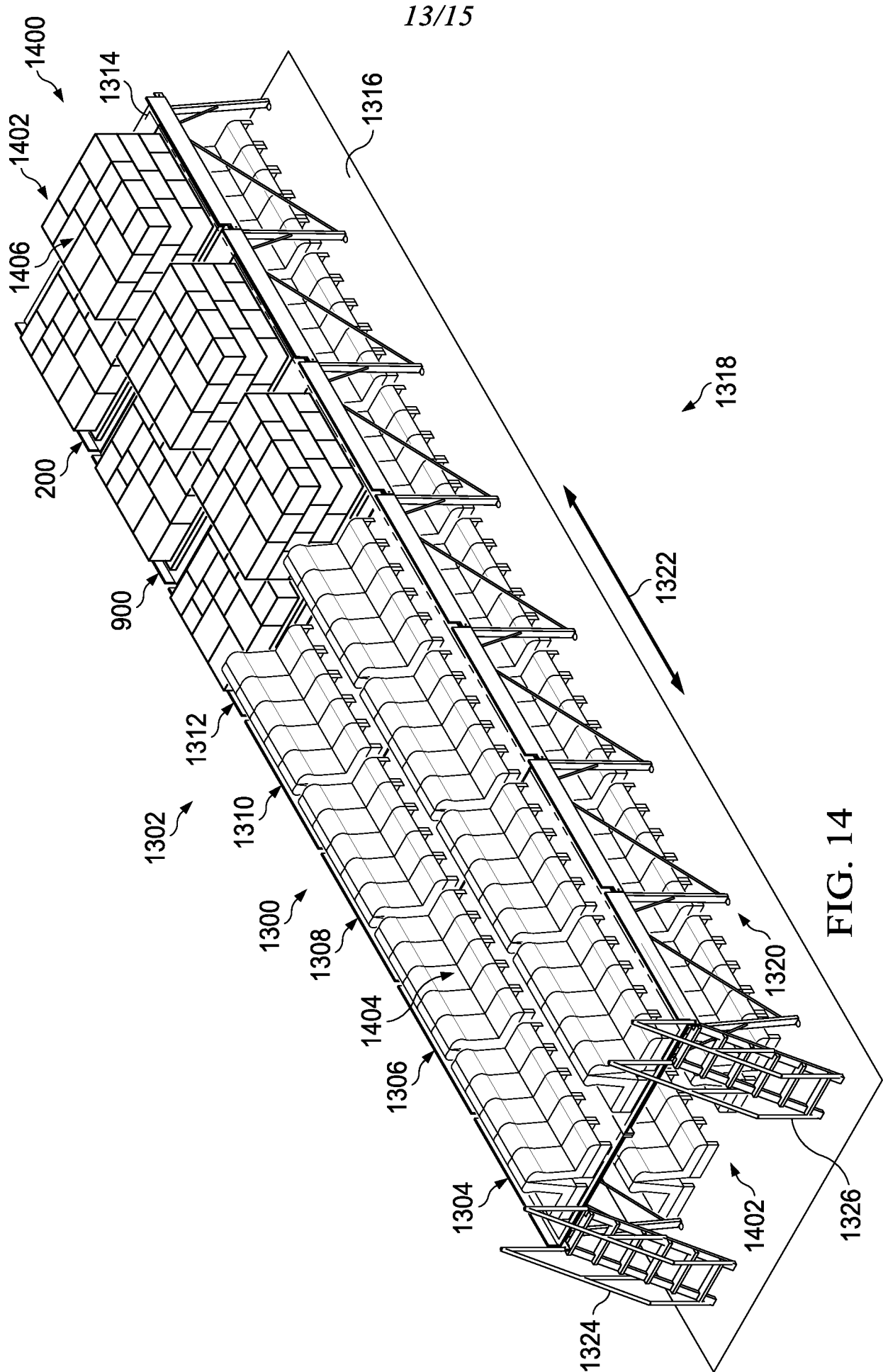


FIG. 14

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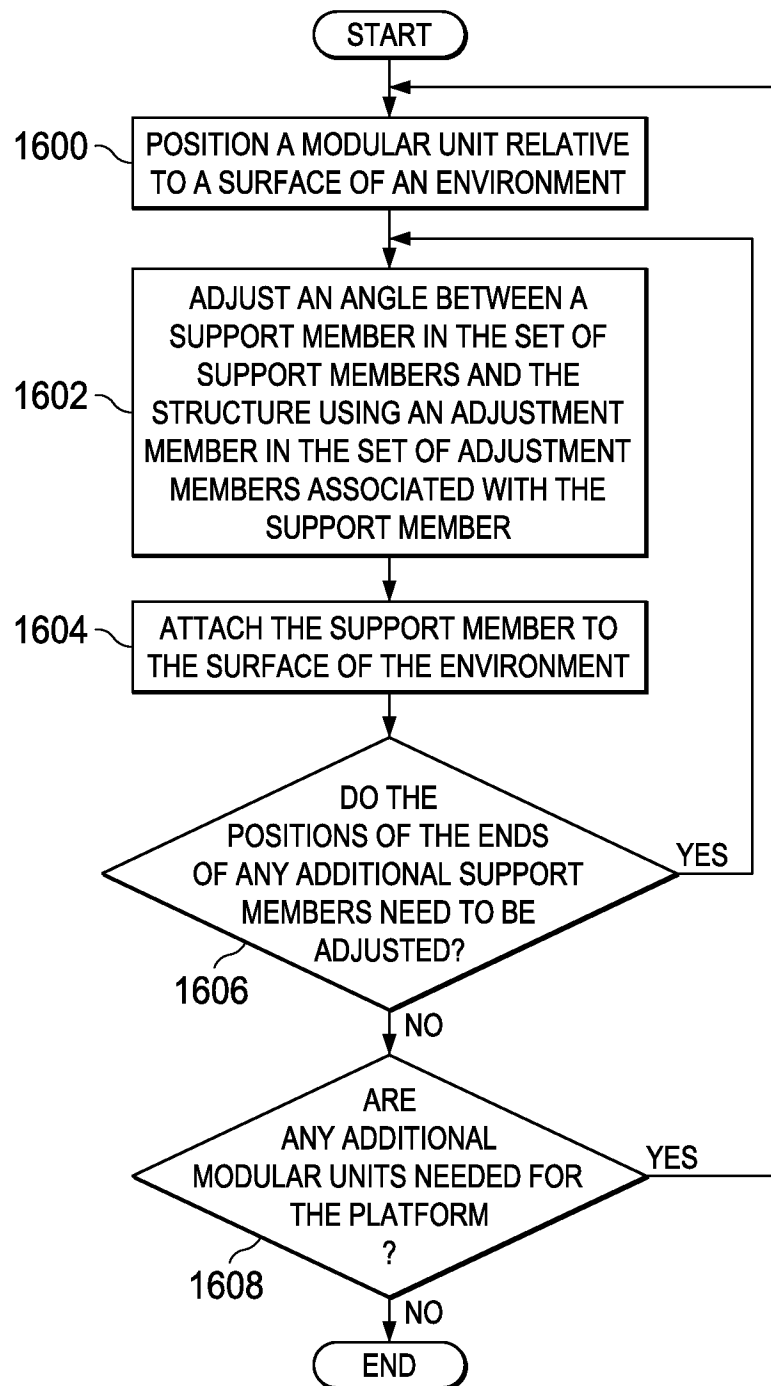


FIG. 16

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