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(54) SUPPORT PLATE SYSTEM FOR ELEVATED FLOORING TILES

TRÄGERPLATTENSYSTEM FÜR ERHÖHTE BODENFLIESEN

SYSTÈME DE PLAQUE DE SUPPORT POUR DES DALLES DE PLANCHER SURÉLEVÉES

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] This invention relates to the field of structural systems for elevating surface materials such as for elevated floors, decks and walkways.

2. Description of Related Art

[0002] Elevated building surfaces such as elevated floors, decks, terraces and walkways are desirable in many interior and exterior environments. One common system for creating such surfaces includes a plurality of surface tiles, such as concrete tiles (pavers), stone tiles, clay tiles, ceramic tiles, or wood tiles, and a plurality of spaced-apart support pedestals and/or joists or stringers upon which the tiles are placed to be supported above a fixed surface. For example, in outdoor applications, the surface may be elevated above a fixed surface to promote drainage, to provide a level structural surface for walking, and/or to prevent deterioration of or damage to the surface tiles.

[0003] Various shapes of surface tiles are possible. In the case of rectangular-shaped tiles, for instance, each of the spaced-apart support pedestals can support four adjacent surface tiles at the tile corners. Stated another way, each rectangular surface tile can be supported by four pedestals that are disposed under each of the corners of the tile.

[0004] The pedestals can have a fixed height or can have an adjustable height such as to accommodate variations in the contour of the fixed surface upon which the pedestals are placed or to create desirable architectural features. Various types of support pedestals are disclosed in U.S. Patent No. 6,363,685 to Kugler, U.S. Patent Publication No. 2004/0261329 to Kugler et al., U.S. Patent No. 8,122,612 to Knight, III et al., and U.S. Patent No. 8,898,999 to Kugler et al, as well as in US2010/000163 which includes a surface component support plate positioned on top of at least three pedestals. For instance, some types of support pedestals include a threaded base member and a threaded support member that is threadably engaged with the base member to enable the height of the support pedestal to be adjusted by rotating the support member or the base member relative to the other. Support pedestals can also include an extender member (e.g., a coupling or coupler member) disposed between the base member and the support member for further increasing the height of the pedestal, if necessary.

SUMMARY OF THE INVENTION

[0005] In an example disclosed herein, an elevated flooring surface assembly includes a plurality of support pedestals disposed upon a fixed surface with a predetermined spacing between the support pedestals, a plurality of support plates disposed over top surfaces of the plurality of support pedestals, and a plurality of surface tiles respectively positioned over the plurality of support plates. Each support plate includes a base having a top surface, a bottom surface opposite to the top surface, a plurality of corner portions, a plurality of outer edge segments disposed between adjacent corner portions, and a locating structure attached to a first of the outer edge segments and extending away from the top surface, where a second of the outer edge segments of each support plate is free of locating structures extending away from the top surface, and where each support plate includes at least three corner portions that are respectively disposed over the top surfaces of at least three of the support pedestals. Each surface tile includes a top surface, a bottom surface opposite to the top surface, a plurality of corner portions, and a plurality of outer edge segments disposed between adjacent corner portions, where one of the outer edge segments of each surface tile abuts the locating structure of the first outer edge segment of its respective support plate.

[0006] In an example assembly, a locating structure may be attached to a third outer edge segment of each support plate and that extends away from the top surface so that a second outer edge segment of the surface tile can abut the locating structure of the third outer edge segment of the support plate. For instance, the first outer edge segment of the support plate may be opposite or adjacent the third outer edge segment of the support plate.

[0007] In another example, at least one of the corner portions of each support plate may be attached to the top surface of the respective support pedestal. For instance, the at least one of the corner portions of each support plate may be mechanically affixed to the top surface of the respective support pedestal, such as with a washer being positioned over the at least one of the corner portions of each support plate and a fastener extending through the washer and into the top surface of the support pedestal.

[0008] In one arrangement, the bottom surface of each support tile may be bonded to the top surface of one of the support plates with at least one adhesive. The adhesive may be any appropriate organic or inorganic adhesive. In one embodiment, the at least one adhesive may be one or more strips of adhesive such as single-sided or double-sided adhesive strips.

[0009] According to the invention as defined in claim 1, a method of constructing an elevated flooring surface is disclosed that includes locating a plurality of support pedestals upon a fixed surface with a predetermined spacing between the support pedestals, placing (e.g., before or after the locating step) support plates over top surfaces of the plurality of support pedestals, and positioning each of a plurality of surface tiles over a respective one of the support plates so that one of a plurality of outer

edge segments of the surface tile abuts a locating structure of a first outer edge segment of the support plate. Each support plate includes a base having a top surface, a bottom surface opposite to the top surface, a plurality of corner portions, and a plurality of outer edge segments disposed between adjacent corner portions, where a first of the outer edge segments of each support plate includes a locating structure extending away from the top surface, where a second of the outer edge segments of each support plate is free of locating structures extending away from the top surface, and where each support plate includes at least three corner portions that are respectively disposed over the top surfaces of at least three of the support pedestals. Furthermore, each surface tile includes a top surface, a bottom surface opposite to the top surface, and a plurality of corner portions, where each outer edge segment of each support tile is disposed between adjacent corner portions of the surface tile, where at least one adhesive secures the bottom surface of each surface tile to the top surface of the one of the support plates, and where the top surfaces of the surface tiles collectively form the elevated flooring surface over the fixed surface.

[0010] The method may further include disposing (e.g., placing, applying, etc.) the at least one adhesive onto the top surfaces of the support plates and/or onto the bottom surface of each of the plurality of surface tiles (e.g., before or after the step of placing the support plates on the pedestals) to bond or secure the bottom surface of the surface tiles to the top surface of the support plates. As an example, the at least one adhesive may be in at least a semi-solid or substantially solid state during the disposing step. For instance, the adhesive may be in the form of one or more strips of adhesive of any appropriate material (e.g., butyl rubber, as just one example) and of any appropriate dimensions (e.g., width, length, thickness) to cover at least a portion of the surface area of the top surfaces of the support plates and/or the bottom surface of each of the plurality of surface tiles so as to secure the surface tiles to the support plates. As one example, the at least one adhesive may cover at least about 5% of such surface area. As another example, the at least one adhesive may cover not more than about 90% of such surface area). As a further example, the at least one adhesive may cover an entirety of such surface area. Other arrangements are also envisioned.

[0011] As another example, the at least one adhesive may be in a fluid state during the applying step and then be allowed to solidify after the surface tile is placed over the support plate to secure the surface tile to the support plate such as through drying, heat, cooling, and/or the like.

[0012] The at least one adhesive may in the nature of any appropriate organic or inorganic adhesive. In one arrangement, the adhesive may be in the form of any appropriate non-reactive adhesive such as a drying-type adhesive. For instance, the adhesive may be a solvent-based adhesive (e.g., mixture of polymers dissolved in any appropriate solvent) where the adhesive hardens or solidifies as the solvent evaporates to secure the surface tiles to the support plates (e.g., such that the adhesive is substantially free of solvents after the adhesive has solidified). As another example, the adhesive may be in the form of a water-based (waterborne) adhesives, such as formulated from natural or synthetic polymers. As a further example, the adhesive may be a hot adhesive (e.g., hot melt adhesive) such as a thermoplastic applied in molten form which solidifies on cooling to bond the surface tiles to the support plates. As a still further example, the adhesive may be in the form of a reactive adhesive such as a one-part adhesive that hardens via a chemical reaction with an external energy source (e.g., radiation, heat, moisture), a multi-component or part adhesive that hardens by mixing together two or more components that chemically react, or the like. In addition to the exemplary aspects and embodiments described above, further aspects and embodiments will become apparent by reference to the drawings and by study of the following descriptions.

DESCRIPTION OF THE DRAWINGS

[0013]

Figure 1 is a perspective view of an interior or exterior building surface assembly.

Figure 2 is a perspective view of a support pedestal for use with the surface assembly of Figure 1.

Figure 3 is a perspective view of the surface assembly of Figure 1 and illustrating a support plate for supporting a building surface component of the surface assembly.

Figure 4 is a perspective view of the support plate of Figure 3.

Figure 5 is similar to Figure 3 but illustrating one or more strips of adhesive being disposed on an upper surface of the support plate.

Figure 6 is similar to Figure 5 but illustrating a building surface component being positioned over the one or more adhesive strips.

Figure 7 is similar to Figure 6 but illustrating the building surface component being positioned onto the one or more adhesive strips to secure the building surface component to the upper surface of the support plate.

Figure 8 is similar to Figure 3 but illustrating another example of the support plate.

Figure 9a is a close-up view of a corner of the support plate of Figure 8 and illustrating an attachment system exploded from the corner of the support plate for securing the corner of the support plate to the upper surface of a support pedestal of the surface assembly.

Figure 9b is a view similar to that in Figure 9a but illustrating another example of an anchoring member of the attachment system.

Figure 9c is a view similar to that in Figure 9a but illustrating another example of an anchoring member of the attachment system

Figure 10 is similar to Figure 9a but with the attachment system attached to the upper surface of a support pedestal to secure the corner of the support plate to the support pedestal.

Figure 11 is similar to Figure 10 but illustrating a building surface component being disposed on the upper surface of the support plate.

Figure 12 is similar to Figure 11 but illustrating an anchoring member being in a different rotational position that allows for removal of the building surface component and support plate from the support pedestal.

Figure 13 is a perspective view of another example of the support plate.

Figure 14 is a perspective view of another example of the support plate.

Figure 15 is a perspective view similar to Figure 8 but illustrating another example of the support plate.

Figure 16 is a close-up view of a corner of the support plate similar to that in Figure 9, but with the attachment system removed for clarity and including a raised portion on the support plate for creating a gap between a surface tile and the raised portion for receipt of a portion of the securement apparatus.

Figure 17 is a view similar to that in Figure 16 but including a surface tile disposed over the raised portion of the support plate and the securement apparatus being disengaged from the support plate.

Figure 18 is a view similar to that in Figure 16 but with the attachment system being disposed in the gap to secure the support plate and surface tile to the support pedestal.

Figure 19 is a sectional view through the view of Figure 18.

Figure 20 is a sectional view similar to that in Figure 19, but according to another example.

DETAILED DESCRIPTION

[0014] Figure 1 illustrates a portion of an elevated building surface assembly 100 that includes a building surface 101 formed from a plurality of building surface components 102 (e.g., surface tiles, pavers, flooring units, etc.) that are elevated above a fixed surface by a support structure 200 made up of a plurality of spaced-apart support members such as support pedestals 201. Each building surface component 102 may broadly include opposing top and bottom surfaces 108, 112, one or more corner portions 110, one or more outer edge segments 116 disposed between adjacent corner portions 110, and a thickness 120 between the top and bottom surfaces 108, 112. The building surface components 102 may take various shapes (e.g., rectangular as shown, square, hexagonal, and/or other shapes) and may be made from virtually any material from which a building surface is to be constructed. Examples include, but are not limited to, slate, stone, porcelain, ceramic, cement compounds, concrete, wood, metal, fiberglass, plastic, composites, combinations of the foregoing, and the like.

[0015] The support pedestals 201 can be placed in a spaced-apart relation on fixed surfaces including, but not limited to, rooftops, plazas, over concrete slabs including cracked or uneven concrete slabs or sub-floors and can be placed within fountains and water features and the like. The elevated building surface assembly 100 can be used for both interior and exterior applications. For instance, the bottom surfaces 112 of the corner portions 110 of each building surface component 102 may be placed upon several support pedestals 201 to elevate the building surface component 102 above the fixed surface. As illustrated in Figure 1, some support pedestals 201 may be disposed beneath four corner portions 110 of adjacent building surface components 102 while other support pedestals 201 may be disposed under the outer edge segments 116 of the building surface components 102 (e.g., between the corner portions 110 and proximate to a central portion of the outer edge segment 116). Such a configuration may be desirable when using very heavy and/or very large building surface components, such as large concrete building surface components, when placing heavy objects on the elevated building surface (e.g., planters, benches, etc.), or the like. Although not illustrated, support pedestals 201 may be disposed in other locations, such as below a central portion of the building surface components 102.

[0016] The support pedestals 201 forming the support structure 200 may be height-adjustable, fixed height, or any combination thereof and may be constructed of any appropriate materials (e.g., metals, plastics, carbon fibers, composites, etc.). Broadly, each support pedestal 201 may include a lower portion that is adapted to be placed upon a fixed surface, an upper portion for receiving a building surface component 102, and a central section extending between or otherwise interconnecting (e.g., perpendicularly) the upper and lower portions. The support pedestals 201 may be laid out in various configurations as may be dictated by the shape and size of the building surface components, such as a rectangular configuration or a triangular configuration to support rectangular or triangular building surface components.

[0017] Turning now to Figure 2, a support pedestal 201 (e.g., one or more of support pedestals 201 of Figure 1) for supporting building surface components (e.g., building surface components 101 of Figure 1) of an elevated building surface assembly (e.g., elevated building surface assembly 100 of Figure 1) according to one embodiment is shown. Broadly, the support pedestal 201 may include a lower portion such as a base member 212 including a base plate 215 that is configured to be placed against a fixed surface (e.g., ground, rooftop, etc.) and a base extension 214 connected to the base plate 215 in any appropriate manner and extending away from the

base plate 215. The support pedestal 300 may also include an upper portion such as a support member 216 including a support plate 218 having an upper or top surface 220 over which building surface components 102 are configured to be placed and support extension 219 connected to the support plate 218 in any appropriate manner and extending away from the support plate 218.

[0018] As shown in Figure 2, the base and support extensions 214, 219 may be threadably engageable with each other to allow the height of the support pedestals 201 (i.e., the distance between the base and support plates 215, 218) to be adjusted. For instance, the base extension 214 may be in the form of a hollow cylindrical member having a threaded inner surface and the support extension 219 may be in the form of a cylindrical member having a threaded outer surface that is configured to be threadably received inside the base extension 214 (or vice versa). The base and support extensions 214, 219 may collectively form a "central section" of the support pedestal 201. In some arrangements, one or more coupling members may be incorporated between the base and support extensions 214, 219 to allow for increased heights of the support pedestal 201 (e.g., such as that disclosed in U.S. Pat. No. 8,156,694). In other arrangements, the support pedestal 201 may have a fixed height, such as where the base and support plates 215, 218 are fixedly attached together by one or more rigid members that are not adjustable relative to each other.

[0019] With reference now to Figures 3-4, one embodiment of a support plate 300 is illustrated that is configured to provide additional support for the building surface components 102 of the elevated building surface assembly 100, reduce the potential for dropping or falling of the building surface components 102 or portions thereof in case of fracture or cracking of the building surface components 102 (e.g., towards or to the fixed surface), facilitate proper location of the building surface components 102 over the support pedestals 201 to create the building surface 101, and increase the overall durability of the elevated building surface assembly 100. Together, the building surface component 102 and support plate 300 may be considered a flooring unit 450. Broadly, the support plate 300 may include a body or base 304 with opposite top and bottom surfaces 308, 312, a plurality of corners or corner portions 316, and a plurality of outer edge segments 320 between adjacent corner portions 316, where the corner portions 316 and outer edge segments 320 collectively form an outer periphery or perimeter of the support plate 300. The base 304 may generally be in the form of a planar member that serves as a barrier between a building surface component 102 laid over the top surface 308 of the base 304 and the fixed surface below the building surface components 102 and that serves to inhibit movement of the building surface component 102 (or portions thereof) downwardly in a direction towards or to the fixed surface. In one arrangement, the base 304 may be free of or substantially free of any apertures therethrough between the top and bottom surfaces 308, 312 (e.g., to reduce the likelihood of passage of one or more portions of a building surface component 102 therethrough). The base 304 may be made of any appropriate material such as metal, plastic, wood, a cement-compound, concrete, clay, fiberglass, rubber, a composite material, one or more combinations of any of the aforementioned, or the like.

[0020] At least one locating structure 324 may be attached or otherwise connected to at least a first outer edge segment 320_1 of the support plate 300 and may extend in a direction away from the top surface 308 of the support plate 300, such as in an upward direction away from the bottom surface 312. The locating structure 324 is broadly configured to abut (e.g., contact) a corresponding outer edge segment 116 of a building surface component 102 (e.g., see Figures 6-7, discussed below) to inhibit movement of the building surface component 102 in a direction towards the locating structure 324 and in a plane that is generally parallel to a plane in which the upper surface 308 of the base 304 resides. A height 325 of the locating structure 324 (i.e., a distance from the top surface 308 to an upper free end of the locating structure 324) may be configured to be the same as or less than the thickness 120 of the building surface component 102 so that the locating structure 324 may be concealed between substantially abutting outer edge segments 116 of adjacent building surface components 102. Stated differently, the top surface 308 of the building surface component 102 may be positioned above the upper free end of the locating structure 324.

[0021] As an example, the locating structure 324 may be in the form of at least one wall (e.g., lip, rib) that extends away from the upper surface 308 (e.g., at 90° or at any other appropriate angle) along at least a portion of the length of the first outer edge segment 320_1 between adjacent corresponding corner portions 316 (e.g. either the entire length as shown in Figures 3-4 or less than the entire length). For instance, the wall may be a portion of the base 304 that is deformed upwardly or otherwise upturned so as to extend away from the top surface 308. Alternatively, the wall may be a separate member that is connected to the base 304 adjacent the first outer edge segment 320_1 in any appropriate manner (e.g., welding or the like). However, the locating structure 324 may take various other forms such as tabs, pins, clips, rails or the like.

[0022] As shown in Figures 3-4, at least a second outer edge segment 320_2 of the support plate 300 is free of locating structures 324 thereon. That is, the second edge segment 320_2 is free of locating structures 324 thereon such that a building surface component 102 disposed over the top surface 308 of the base 304 would not be inhibited from sliding or otherwise moving in a direction towards the second outer edge segment 320_2 and in a plane that is generally parallel to the plane in which the upper surface 308 of the base 304 resides (i.e., in the absence of other components, materials, etc. that would tend to inhibit such movement such as at least one ad-

hesive between the bottom surface 112 of the building surface component 102 and the top surface 308 of the base 304 (discussed below), a locating tab 230 extending from an upper surface 220 of a support pedestal 201, an adjacent building surface component 102, etc.). Among other advantages, this feature simplifies manufacture of the support plate 300, facilitates placement or location of a building surface component 102 over the top surface 308 of the support plate 300, allows for receipt of different sizes (e.g., widths, lengths) of building surface component 102, and the like.

[0023] In one arrangement, another locating structure 324 may be attached or otherwise connected to a third outer edge segment 320_3 of the support plate 300 and may extend in a direction away from the top surface 308 of the support plate 300, such as in an upward direction away from the bottom surface 312. As shown in Figures 3-4, for instance, the first and third outer edge segments 320_1, 320_3 may be adjacent to each other (i.e., they may share a common corner portion 316 of the support plate 300). This arrangement may facilitate location of a building surface component 102 over the top surface 308 of the support plate 300 by, for instance, allowing an installer to urge a corner portion 110 of a building surface component 102 into the corner portion 316 of the support plate 300 between the adjacent first and third outer edge segments 320_1, 320_3 until the corner portion 110 abuts the corner portion 316 or is seated adjacent or over the corner portion 316. In another arrangement, the first and third outer edge segments 320_1, 320_3 may be opposite each other (e.g., parallel to each other) and not share any common corner portions 316 of the support plate. In a further arrangement, the support plate 300 may include only a single locating structure such as the locating structure 324" in the support plate 300" of Figure 13.

[0024] To facilitate the reader's understanding of how support plates 300 may be incorporated and used within an elevated building surface assembly 100, various methods of constructing an elevated building surface assembly 100 at a particular site of interest will now be discussed. As initially shown in Figures 1 and 3, a plurality of support pedestals 201 may be located or placed upon a fixed surface (e.g., ground, rooftop, etc.) at the site with any appropriate (e.g. predetermined) spacing between the support pedestals 201. For instance, any appropriate number of fixed and/or adjustable-height support pedestals 201 may be used and may be selected or configured so that the upper surfaces 220 of at least some adjacent ones of the support pedestals 201 are substantially coplanar. As one example, the upper surfaces 220 of all of the support pedestals 201 may be coplanar. As another example, however, the elevated building surface assembly 100 may be constructed so that the building surface 101 has two or more portions (e.g., levels) at different heights relative to a fixed reference plane that is parallel to surfaces of the multiple levels. Thus, in another arrangement, the upper surfaces 220 of a first group of adjacent support pedestals 201 may reside in a first plane while the upper surfaces 220 of a second group of adjacent support pedestals 201 may reside in a second plane, where the first and second planes are at different heights from a fixed third reference plane that is parallel to the first and second planes.

[0025] In any case, one or more support plates 300 may be appropriately placed over the top surfaces 220 of a plurality of the support pedestals 201, such as by placing the bottom surface 312 of each support plate 300 adjacent corner portions 316 onto or over the upper surfaces 220 of different respective adjacent support pedestals 201 as shown in Figure 3. For a support plate 300 having four corner portions 316, for instance, the four corner portions 316 may be placed over four respective adjacent support pedestals. However, support plates 300 having fewer than four corner portions (e.g., three corner portions) or more than four corner portions (e.g., five, six, etc.) are also encompassed in the present disclosure. In some cases, the upper surface 220 each support pedestal 201 may support corner portions 316 from two or more support plates 300. In the case where the support pedestals 201 include spacer tabs 230 or the like extending from the upper surface 220 for spacing adjacent building surface components 102, the corner portions 316 of the support plate 300 may be urged or placed between adjacent pairs of spacer tabs 230 on the upper surface 220 of the support pedestal 201. In some arrangements, each support plate 300 may be secured in any appropriate manner to the support pedestals 201 (one representative manner being discussed below in relation to Figures 9-10).

[0026] The method may then include positioning a building surface component 102 over and/or on each respective support plate 300 so that one of the outer edge segments 116 of the building surface component 102 abuts (e.g., full contact, near contact, etc.) the locating structure 324 of the first outer edge segment 320_1 of the support plate 300. Compare building surface component 102 and support plate 300 in Figures 6-7. More particularly, the bottom surface 112 of the building surface component 102 may be laid over the top surface 308 of the support plate 300 so that the corner portions 110 of the building surface component 102 are generally adjacent (e.g., above) the corner portions 316 of the support plate 300. Furthermore, the corner portions 110 of the building surface component 102 may be supported by the upper surfaces 220 of the support pedestals 201. With respect to the embodiment of the support plate 300 of Figures 3-7, another outer edge segment 116 of the building surface component 102 may abut the locating structure 324 of the third outer edge segment 320_3 of the support plate 300.

[0027] In one arrangement, the building surface components 102 may be positioned over the support plates 300 at the site after the support plates 300 have already been positioned over the support pedestals 201. Stated differently, in contrast to positioning the building surface components 102 on the support plates 300 at a manu-

facturing facility or the like and then transporting each building surface component 102/support plate 300 unit to the site at which the elevated flooring surface is being built, the building surface components 102 and support plates 300 may be separately transported to the site (e.g., whether as part of the same or different shipments) and then building surface components 102 may be positioned over the support plates 300 at the site (after the support plates 300 have already been positioned over the support pedestals 201).

[0028] In any case, once the building surface component 102 is laid over base 304 of the support plate 300 as shown in Figure 7, it is noted how the upper surface 308 of the building surface component 102 may be positioned above the locating structures 324 of the first and third outer edge segments 320_1, 320_3 to conceal the locating structures 324 for safety and aesthetical purposes. At this point, each support plate 300 may serve to provide additional support for the building surface component 102 laid thereover, reduce the likelihood of dropping or falling of the building surface component 102 or portions thereof in case of fracture or cracking of the building surface components 102 (e.g., towards or to the fixed surface), increase the overall durability of the elevated building surface assembly 100, and the like.

[0029] In one arrangement, at least one adhesive 400 may be disposed (e.g., applied, placed, etc.) onto the top surfaces 308 of the support plates 300 and/or onto the bottom surfaces 112 of the building surface components 102 and then the building surface components 102 may be placed over the support plates 300 so that the at least one adhesive 400 secures or bonds the building surface components 102 to the support plates 300 and thereby further increases the overall durability of the elevated building surface assembly 100 and the like. Compare Figures 3, 5 and 6. As mentioned previously, the combination of the support plate 300 and one or more building surface components 102 being disposed thereover may be considered a flooring unit 450. In one embodiment, the at least one adhesive may be in at least a semi-solid or substantially solid state during the disposing step. For instance, the at least one adhesive may be in the form of one or more adhesive strips 400 (e.g., where each of opposing first and second surfaces of the adhesive strips 400 are adhesive or tacky) of any appropriate material (e.g., butyl rubber, as just one example) and of any appropriate dimensions (e.g., width, length, thickness) to cover at least a portion of the surface area of the top surface 308 of the support plate 300 and/or the bottom surface 112 of the building surface component 102 (e.g., at least about 5% of the surface area; not greater than about 90% of the surface area; etc.). It is noted that the thickness of the strips 400 in Figures 5-6 has been exaggerated relative to other illustrated components to assist the reader in understanding the present disclosure.

[0030] As another example, the at least one adhesive 400 may be in a fluid state when it is applied to the top surface 308 of the support plate 300 and/or the bottom surface 112 of the building surface component 102 and then be allowed to solidify (e.g., through drying, heat, cooling, etc.) after the building surface component 102 is placed onto the support plate 300 to secure the building surface component 102 to the support plate 300. In one arrangement, the at least one adhesive 400 may include any appropriate organic or inorganic adhesive. As one example, the at least one adhesive 400 may be in the nature of a non-reactive adhesive such as a drying-type adhesive. For instance, the at least one adhesive 400 may be a solvent-based adhesive (e.g. mixture of polymers dissolved in a solvent) where the adhesive hardens or solidifies as the solvent evaporates to secure the surface tiles to the support plates (e.g., such that the adhesive is substantially free of solvents after the adhesive has solidified). As another example, the adhesive may be in the form of a water-based (waterborne) adhesives, such as formulated from natural or synthetic polymers. As a further example, the at least one adhesive 400 may be a hot adhesive (e.g., hot melt adhesive) such as a thermoplastic applied in molten form which solidifies on cooling to bond the building surface components 102 to the support plates 300. As a still further example, the at least one adhesive 400 may be in the form of a reactive adhesive such as a one-part adhesive that hardens via a chemical reaction with an external energy source (e.g., radiation, heat, moisture), a multi-component or part adhesive that hardens by mixing together two or more components that chemically react, or the like.

[0031] In one arrangement, a gap 600 may be provided on the top surface 308 of the support plate 300 and the bottom surface 112 of the building surface component 102 over which the at least one adhesive is not applied. As shown in Figures 5-6, as just one example, the gap 600 may begin at the outer edge segments 320 and extend inwardly towards (but not to) a central portion of the support plate 300. For instance, the gap 600 may extend along at least a portion of one or more of the outer edge segments 320. In one arrangement, the gap 600 may extend along at least a portion of one of the outer edge segments 320 from which locating structures 324 do not extend (e.g., such as the second outer edge segment 320_2). This arrangement advantageously allows one or more devices to be disposed between the bottom surface 112 of the building surface component 102 and the top surface 308 of the support plate 300 for purposes of interlocking one or more adjacent components of the elevated building surface assembly 100 to increase the structural stability of the assembly 100. As just one example, one or more restraint splines as disclosed in U.S. Pat. App. Pub. No. 2015/0308126 may be disposed between the bottom surface 112 of one building surface component 102 and the top surface 308 of one support plate 300 and between the bottom surface 112 of an adjacent building surface component 102 and the top surface 308 of an adjacent support plate 300 to interlock the adjacent building surface components 102 and limit upward movement of one of the adjacent building surface

components 102 relative to the other. In one arrangement, the restraint splines may be secured to the support pedestals 201 in any appropriate manner (e.g., inserting fasteners through the restraint splines and threading the same into the upper surfaces 220 of the support pedestals 201).

[0032] As discussed previously, a locating structure 324 need not necessarily extend along an entirety of a particular outer edge segment 320 of a support plate 300. With reference to the support plate 300' of Figure 8, for instance, the locating structure 324' of the first outer edge segment 320_1' may stop short of one or both of the corner portions 316' between which the first outer edge segment 320_1' extends to create a space 328 along the first outer edge segment 320_1' adjacent the corner portion 316' along which the locating structure 324' does not extend. While not shown in Figure 8, the first outer edge segment 320_1' (e.g., and other outer edge segments 320) may have spaces 328 adjacent both corner portions 316' between which the outer edge segments extend (e.g., see support plate 300‴ of Figure 14).

[0033] In any case, the spaces 328 may facilitate attachment of the support plate 300 to the support pedestals 201. As one example, and with reference now to Figure 9a which is a partial perspective view of one corner 316 of the support plate 300' being disposed over the upper surface 220 of a support pedestal 201 before placement of a building surface component 102 thereover, any appropriate attachment apparatus or system 500 may be positioned into at least a portion of the space 328 and used to secure the support plate 300' to the upper surface 220 of the support pedestal 201. For instance, the attachment system 500 may include an anchoring member 504 (e.g. plate such as a washer) with an aperture 512, and a threaded fastener 508 that is sized to be inserted through the aperture 512 and threaded into the upper surface 220 of the support pedestal 201.

[0034] Before placement of a building surface component 102 over the support plate 300 as discussed previously, the anchoring member 504 may be placed over the top surface 308' of the support plate 300 adjacent a corner portion 316' of the support plate 300'. The fastener 508 may then be inserted through the aperture 512 and into the upper surface 220 of the support pedestal 201 until the head (not labeled) of the fastener 508 contacts the anchoring member 504and clamps the anchoring member 504 against the top surface 308' of the support plate 300' which thus clamps the support plate 300' against the upper surface 220 of the support pedestal 201. See Figure 10. For instance, the fastener 508 may be a self-tapping fastener that may be inserted through the aperture 512 and threaded into the upper surface 220 of the support pedestal 201. As another example, a preformed threaded aperture may be formed in the upper surface 220 of the support pedestal 201 into which the fastener 508 may be threaded. In any event, a building surface component 102 may then be disposed or placed over the upper surface 308 of the support plate 300' as discussed previously. See Figure 11. In the event that the at least one adhesive 400 or the like is used to bond or secure the building surface component 102 to the support plate 300', use of the attachment system 500 to secure the support plate 300' to the support pedestal 201 also thereby secures the building surface component 102 to the support pedestal 201.

[0035] In one arrangement, the anchoring member 504 may include a notch 516 therein that may allow for rotation of the anchoring member 504 and alignment of the notch 516 with the support plate 300' (or another support plate 300 disposed over the upper surface 220 of the support pedestal 201) to allow for removal of the support plate 300' and building surface component 102 from the support pedestal 201 without having to first remove any other support plates 300 and building surface components 102 from the upper surface 220 of the support pedestal 201. See Figure 12. For instance, the anchoring member 504 may be the same as that disclosed in U.S. Pat. No. 8,302,356. While the anchoring member 504 is illustrated in Figure 9a as having a generally round or circular outer peripheral shape, various other outer peripheral shapes are envisioned and encompassed herein, such as rectangularly-shaped as is the anchoring member 504' of Figure 9b, hexagonally-shaped as is the anchoring member 904" of Figure 9c, and the like.

[0036] In one arrangement, one or more of the support plates 300 may include one or more raised features or portions 700 that are configured to create a gap between a top surface 308 of the support plate 300 and the bottom surface 112 of the building surface component 102 (e.g., surface tile, paver, etc.) for receipt of the attachment system 500 therein to secure the support plate 300 and thus the surface tile 102 to the upper surface 220 of the support pedestal 201. With reference now to Figure 16, the raised portion 700 may be generally disposed adjacent a corner portion 316 of the support plate 300 and arranged to extend upwardly away from the top surface 308 of the support plate 300 (e.g., in a direction opposite the support plate 220 of the support pedestal 201). An uppermost or top surface 708 of the raised portion 700 may be spaced from the corner portion 316 by a distance 716.

[0037] When a building surface component 102 is disposed over the top surface 308 of the support plate 300 such that the corner portions 110 of the building surface component 102 are generally aligned over the corner portions 316 of the support plate and the bottom surface 112 of the building surface component 102 contacts the uppermost surface 708 of the raised portion 700, the raised portion 700 maintains a gap 702 between the top surface 308 of the support plate 300 and the bottom surface 112 of the building surface component 102 (e.g., so as to space or separate the bottom surface 112 of the building surface component 102 from the top surface 308 of the support plate near the corner portions 110, 316). See Figures 17-19. The gap 702 may begin at the corner portion 316 of the support plate 300 and extend inwardly to the uppermost portion 708 of the raised portion 700 along

the distance 716 as well as at least partially down a length of at least one of first and second outer edge segments 116, 320 of the building surface component 102 and support plate 300. In other words, the gap 702 created by the raised portion 700 allows a user to selectively insert the attachment system 500 into the gap 702 while the building surface component 102 is attached to the top surface 308 of the support plate 300 and resting over the support pedestal. The raised portions 700 may be formed or disposed near one or more of the corner portions 316 of each surface tile 300 to create gaps 702 for receipt of one or more corresponding attachment systems 500.

[0038] As discussed previously, at least one adhesive 400 may be used to secure the bottom surface 112 of the building surface component 102 to the top surface 308 of the support plate 300. However, the adhesive 400 may generally not extend into the gap 702 along the distance 316 adjacent the corner portion 316 of the support plate 300 to allow the attachment apparatus or system 500 to be selectively positioned into at least a portion of the gap 702 to secure the support plate 300 to the upper surface 220 of the support pedestal 201. For instance, and as discussed previously, a gap 600 may be formed between the outer edge segments 320 of the support plate and an outer periphery of the adhesive. See Figures 5-6. In this regard, the gaps 702 and 600 may be at least partially overlapping.

[0039] Figure 17 illustrates the anchoring member 504 of the attachment apparatus 500 being in a first rotational position whereby the anchoring member 504 is disposed outside of the gap 702 (e.g., where the notch 516 is generally aligned with the corner portions 116, 316). In this positon, the corner portions 116, 316 may be freely lifted away from or disposed onto the support plate 220 of the support pedestal 201. For instance, the surface tile 102 may be secured to the support plate 300 at any appropriate location (e.g., either at or away from the building site of the elevated flooring surface 101) and the resulting flooring unit 450 may be disposed over a plurality of support pedestals 201 (e.g., where the corner portions 110, 316 are disposed over the support plates 220 of the support pedestals 201). Figures 18-19 illustrate another rotational position of the anchoring member 504 whereby a portion of the anchoring member 504 is disposed within the gap 702 so as to limit lifting movement of the corner portions 116, 316 of the surface tile 102 and support plate 300 away from the support plate 220 of the support pedestal 201 (e.g., to limit movement of the flooring unit 450 away from the support pedestal 201).

[0040] The specific configuration and dimensions of the raised portion 700 and/or the attachment apparatus 500 (e.g., the washer 504) may be selected so that the attachment apparatus 500 is able to be received within or inserted into the gap 704, either freely or with a friction fit. Stated differently, the height or thickness 505 of the anchoring member 504 may be about equal to or less than a height or thickness 704 of the gap 702. In one arrangement, the raised portion 700 may be a separate piece of material (e.g., metallic, plastic, etc.) that may be attached to the top surface 308 of the support plate 300 in any appropriate manner (e.g., via welding, use of adhesives, etc.). In another arrangement, the raised portion 700 may be formed from a portion of the support plate 300 itself. For instance, and with reference to the embodiment of Figure 20, a raised portion 700' may be created by way of pressing a portion of the support plate 300 upwardly from the bottom surface 312 towards the top surface 308 of the support plate 300 so that the uppermost surface 708 of the raised portion 700' is positioned above the rest of the top surface 308 of the support plate 300.

[0041] Various other manners of creating or forming raised portions on the top surface 308 of the support plate 300 for purposes of maintaining gaps between the bottom surface 112 of the surface tile 102 and the top surface 308 of the support plate 300 for receipt of attachment systems 500 are envisioned and encompassed herein. The raised portions 700 may be of any appropriate shape such as but not limited to circular, square, triangular, elongated, chevron, etc. When support plates 300 including one or more raised portions 700 are used, such support plates may have any appropriate number of locating structures 324 thereon or none at all.

[0042] The foregoing description has been presented for purposes of illustration and description. Furthermore, the description is not intended to limit the invention to the form disclosed herein. Consequently, variations and modifications commensurate with the above teachings, and skill and knowledge of the relevant art, are within the scope of the present invention as defined in the appended claims. As one example, while a single building surface component 102 is shown being laid over a single support plate 300 in the figures herein, it is envisioned that two or more building surface components 102 may be laid over and supported on a single support plate 300. As just one simplistic example, the single building surface component 102 shown in Figures 6-7 may be replaced by two smaller building surface components 102 (e.g., each being about half the size of the building surface component 102 shown in Figures 6-7). In this example, each of such two smaller building surface components 102 would include two corner portions 110 that are disposed over two corner portions 316 of the support plate and two other corner portions that generally abut the two other corner portions of the other smaller building surface component 102 (e.g., where one outer edge segment 116 of each smaller building surface component 102 would abut one outer edge segment 116 of the other smaller building surface component 102 over a central portion of the support plate 300).

[0043] As another example, not all support plates 300 in a particular elevated building surface assembly 100 need be of the same configuration. For instance, it may be beneficial for some support plates 300 of an elevated building surface assembly 100 to be of the configuration shown in Figures 3-7 and for other support plates 300 of

the assembly 100 to be of the configuration shown in Figure 13 (e.g., where the corner portions 316 of the support plates 300 may have spaces 328 as shown in Figures 9-12 for securement of the corner portions 316 to support pedestals 201). Furthermore, it is envisioned that at least some support plates 300 of an assembly 100 may extend over at least three or more rows of support pedestals 201. For instance, see support plate 300"" of Figure 15. In this case, one or more support pedestals 201 may support the support plate 300"" at locations other than the corner portions 316"" of the support plate 300"". For instance, one or more support pedestals 201 may be located at locations along one or more of the outer edge segments 320 that are halfway between the corner portions 316"", one or more support pedestals 201 may be disposed underneath a central portion of the support plate 300"", and/or the like. The support plate 300"" of Figure 15 may support a single building surface component 102 or two or more building surface components 102.

[0044] In one embodiment, one or more raised portions 700 may be formed at the top surface 308 of the support plate 300 at or near locations other than the corner portions 316 of the support plate 300. In the example above in which support pedestals 201 are sometimes disposed underneath the outer edge segments 320 of the support plates 300 (e.g. halfway between the corner portion 316), one or more raised portions 700 may be formed near such locations such that the uppermost surfaces 708 are spaced inwardly from the outer edge segments 320 by a distance 712 to maintain a gap between the upper surface 308 of the support plate 300 and the bottom surface 112 of the surface tile 102 at such location for receipt of an attachment system 500. In one variation, one or more markers (e.g., indentations, notches, etc.) may be disposed adjacent the outer edge segment 320 near the raised portion 700 to signal to an installer the location of the gap 702.

[0045] As a further example, it is not necessary that the spaces 328 are provided on the support plates 300 disclosed herein to allow the support plates 300 to be secured to the support pedestals 201. That is, various other types of attachment apparatuses and systems are envisioned and encompassed herein that may be used to secure the support plates 300 to the support pedestals 201 even if the locating structures 324 extend to the corner portions 316 of the support plates 300. As one simplistic example, fasteners may be inserted through the base 304 and into the upper surfaces 220 of the support pedestals 201 to secure the support plates 300 to the support pedestals 201 (e.g., before the building surface components 102 are placed over the support plates 300).

[0046] It is also to be understood that the various components disclosed herein, spaces between adjacent components, etc. are not necessarily drawn to scale. Also, many components have been labeled herein as "first," "second," "third," etc. merely to assist the reader in understanding the relationships between the components and does not imply that an elevated building surface assembly encompassed herein need necessarily have the specific arrangements shown and described herein.

Claims

1. A method of constructing an elevated flooring surface, comprising:

   locating a plurality of support pedestals (201) upon a fixed surface with a predetermined spacing between the support pedestals;

   placing support plates (300) over top surfaces of the plurality of support pedestals; wherein each support plate includes a base (304) having a top surface (308), a bottom surface (312) opposite to the top surface, a plurality of corner portions (316), a plurality of outer edge segments (320) disposed between adjacent corner portions, an outer periphery formed by the plurality of outer edge segments and the plurality of corner portions, and at least a first raised portion (700) extending upwardly away from the top surface adjacent the outer periphery, wherein each support plate includes at least three corner portions that are respectively disposed over the top surfaces of at least three of the support pedestals;

   positioning each of a plurality of building surface components (102) over a respective one of the support plates, wherein each building surface component includes a top surface (108), a bottom surface (112) opposite to the top surface (108), a plurality of corner portions (110), and a plurality of outer edge segments (116) disposed between adjacent corner portions, wherein a first corner portion of the plurality of corner portions of each building surface component is positioned adjacent a first corner portion of the plurality of corner portions of each support plate, and wherein the first raised portion of each support plate contacts the bottom surface of each building surface component to create a gap (702) between the top surface of each support plate and the bottom surface of each building surface component adjacent the outer periphery, wherein the gap opens between the outer edge segment of each support plate and the outer edge segment of each building surface component;

   positioning attachment systems (500) into the gaps; and

   securing the support plates to the support pedestals using the attachment systems.

2. The method of claim 1, wherein the attachment systems each include a threaded fastener (508), and

wherein the securing includes threading the fasteners into the support pedestals.

3. The method of any preceding claim, further comprising:
disposing an adhesive (400) onto one or both of the top surface of each support plate and the bottom surface of each surface tiles, wherein the adhesive secures the bottom surface of each surface tile to the top surface of each support plate.

4. The method of claim 3, wherein the disposing step occurs between the placing and positioning steps.

5. The method of any preceding claim, wherein the first raised portion (700) is adjacent the first corner portion of the plurality of corner portions (316) of each support plate.

6. The method of any preceding claim, wherein the gap (702) extends between the corner portions of each support plate and each building surface component to the first raised portion of each support plate.

7. The method of any preceding claim, wherein the first raised portion (700) is adjacent a location on a first outer edge segment of the plurality of outer edge segments of each support plate.

8. The method of any preceding claim, wherein the gap (702) extends from the outer edge segments to the first raised portion of each support plate.

9. The method of any preceding claim, wherein each support plate of each building surface component further includes a locating structure (324) attached to a first of the outer edge segments and extending away from the top surface, wherein the locating structures is configured to locate each building surface component over the top surface of each corresponding support plate.

10. The method of any preceding claim, wherein each support plate is a substantially planar member that extends across a substantial entirety of the bottom surface of each corresponding building surface component.

11. The method of any preceding claim, wherein each support pedestal (201) includes a base member (212) that rests upon the fixed surface, a support member (216), and a central section that interconnects the base member and support member, wherein the support plates are disposed on top surfaces of the support members of the support pedestals.

12. The method of any preceding claim, wherein the attachment systems (500) each include an anchoring member (504) and a fastener.

13. The method of claim 12, wherein the securing includes extending the fastener through the anchoring member of each attachment system and into an upper surface of a support pedestal, wherein the anchoring members re selectively rotatable about corresponding fasteners into corresponding gaps to secure the building surface components to corresponding support pedestals.

14. The method of claim 13, wherein the anchoring members are washers.

15. The method of claim 12, wherein the anchoring members each include a notch (516) therein that allows for release of building surface components from support pedestals when the anchoring members are rotated about the fasteners to align the notches with a corner portion of the support plates.

Patentansprüche

1. Verfahren zur Herstellung eines erhöhten Fußbodenoberflächenaufbaus mit:

Anordnen einer Mehrzahl von Stützsockeln (201), welche auf einer festen Fläche mit einem vorbestimmten Abstand zwischen den Stützsockeln angeordnet sind,
Platzieren von Stützplatten (300) über den oberen Oberflächen der Vielzahl von Stützsockeln; wobei jede Stützplatte eine Basis (304) mit einer oberen Oberfläche (308), einer unteren Oberfläche (312) gegenüber der oberen Oberfläche, einer Vielzahl von Eckabschnitten (316), einer Vielzahl von äußeren Randsegmenten (320), die zwischen benachbarten Eckabschnitten angeordnet sind, einem äußeren Umfang, der durch die Vielzahl von äußeren Randsegmenten und die Vielzahl von Eckabschnitten gebildet wird, und mindestens einem ersten erhöhten Abschnitt (700), der sich nach oben weg von der oberen Oberfläche benachbart zum äußeren Umfang erstreckt, aufweist, wobei jede Stützplatte mindestens drei Eckabschnitte aufweist, die jeweils über den oberen Oberflächen der Stützsockel angeordnet sind, und wobei jede Stützplatte mindestens drei Eckabschnitte aufweist, die jeweils über den oberen Oberflächen von mindestens drei der Stützsockel angeordnet sind,
Positionieren jeder einer Vielzahl von Bauoberflächenkomponenten (102) über einer jeweiligen der Trägerplatten, wobei jede Bauoberflächenkomponente eine obere Oberfläche (108),

eine der oberen Oberfläche (108) gegenüberliegende untere Oberfläche (112), eine Vielzahl von Eckabschnitten (110) und eine Vielzahl von zwischen benachbarten Eckabschnitten angeordneten Außenkantensegmenten (116) aufweist, wobei ein erster Eckabschnitt der Vielzahl von Eckabschnitten jeder Bauoberflächenkomponente benachbart zu einem ersten Eckabschnitt der Vielzahl von Eckabschnitten jeder Trägerplatte angeordnet ist, und wobei der erste erhabene Abschnitt jeder Stützplatte die untere Oberfläche jeder Bauoberflächenkomponente berührt, um einen Spalt (702) zwischen der oberen Oberfläche jeder Stützplatte und der unteren Oberfläche jeder Bauoberflächenkomponente angrenzend an die obere Oberfläche der Stützplatte zu erzeugen, wobei sich der Spalt zwischen dem äußeren Randsegment jeder Stützplatte und dem äußeren Randsegment jeder Bauoberflächenkomponente öffnet,
Anordnen von Befestigungssystemen (500) in den Spalten, und
Befestigen der Stützplatten an den Stützsockeln mit Hilfe der Befestigungssysteme.

2. Verfahren nach Anspruch 1, wobei die Befestigungssysteme jeweils ein mit Gewinde versehenes Befestigungselement umfassen und wobei das Befestigen das Einschrauben der Befestigungselemente in die Stützsockel umfasst.

3. Verfahren nach einem der vorhergehenden Ansprüche außerdem umfassend:
Aufbringen eines Klebstoffs (400) auf eine oder beide der oberen Oberfläche jeder Trägerplatte und der unteren Oberfläche jeder Oberflächenfliese, wobei der Klebstoff die untere Oberfläche jeder Oberflächenfliese an der oberen Oberfläche jeder Trägerplatte befestigt.

4. Verfahren nach Anspruch 3, wobei der Schritt des Ablegens zwischen den Schritten des Platzierens und Positionierens erfolgt.

5. Verfahren nach einem der vorhergehenden Ansprüche, wobei der erste erhabene Abschnitt (700) an den ersten Eckabschnitt der Vielzahl von Eckabschnitten (316) jeder Trägerplatte angrenzt.

6. Verfahren nach einem der vorhergehenden Ansprüche, wobei sich der Spalt (702) zwischen den Eckabschnitten jeder Trägerplatte und jeder Bauoberflächenkomponente bis zum ersten erhöhten Abschnitt jeder Trägerplatte erstreckt.

7. Verfahren nach einem der vorhergehenden Ansprüche, wobei der erste erhabene Abschnitt (700) an eine Stelle auf einem ersten äußeren Randsegment der Vielzahl von äußeren Randsegmenten jeder Trägerplatte angrenzt.

8. Verfahren nach einem der vorhergehenden Ansprüche, wobei sich der Spalt (702) von den äußeren Randsegmenten zu dem ersten erhöhten Abschnitt jeder Trägerplatte erstreckt.

9. Verfahren nach einem der vorhergehenden Ansprüche, wobei jede Trägerplatte jeder Bauoberflächenkomponente ferner eine Positionierungsstruktur (324) aufweist, die an einem ersten der äußeren Randsegmente angebracht ist und sich von der oberen Oberfläche weg erstreckt, wobei die Positionierungsstrukturen so konfiguriert sind, dass sie jede Bauoberflächenkomponente über der oberen Oberfläche jeder entsprechenden Trägerplatte positionieren.

10. Verfahren nach einem der vorhergehenden Ansprüche, wobei jede Stützplatte ein im Wesentlichen ebenes Element ist, das sich im Wesentlichen über die gesamte Bodenfläche jeder entsprechenden Gebäudeoberflächenkomponente erstreckt.

11. Verfahren nach einem der vorhergehenden Ansprüche, wobei jeder Stützsockel (201) ein Basiselement (212), das auf der festen Oberfläche ruht, ein Stützelement (216) und einen mittleren Abschnitt, der das Basiselement und das Stützelement miteinander verbindet, umfasst.

12. Verfahren nach einem der vorhergehenden Ansprüche, wobei die Befestigungssysteme (500) jeweils ein Verankerungselement (504) und ein Befestigungselement umfassen.

13. Verfahren nach Anspruch 12, wobei das Befestigen das Erstrecken des Befestigungselements durch das Verankerungselement jedes Befestigungssystems und in eine obere Fläche eines Stützsockels umfasst, wobei die Verankerungselemente selektiv um entsprechende Befestigungselemente in entsprechende Lücken drehbar sind, um die Bauoberflächenkomponenten an entsprechenden Stützsockeln zu befestigen.

14. Verfahren nach Anspruch 13, wobei die Verankerungselemente Unterlegscheiben sind.

15. Verfahren nach Anspruch 12, wobei die Verankerungselemente jeweils eine Kerbe (516) aufweisen, die das Lösen von Bauoberflächenkomponenten von Stützsockeln ermöglicht, wenn die Verankerungselemente um die Befestigungsmittel gedreht werden, um die Kerben mit einem Eckabschnitt der Stützplatten auszurichten.

Revendications

1. Procédé de construction d'une surface de plancher surélevée, comprenant les étapes suivantes :

positionner une pluralité de socles de support (201) sur une surface fixe avec un espacement prédéterminé entre les socles de support ;
placer des plaques de support (300) sur des surfaces supérieures de la pluralité de socles de support; dans lequel chaque plaque de support comprend une base (304) présentant une surface supérieure (308), une surface inférieure (312) opposée à la surface supérieure, une pluralité de parties d'angle (316), une pluralité de segments de bord extérieurs (320) disposés entre des parties d'angle adjacentes, une périphérie extérieure formée par la pluralité de segments de bord extérieurs et la pluralité de parties d'angle, et au moins une première partie en relief (700) s'étendant vers le haut à l'écart de la surface supérieure en un endroit adjacent à la périphérie extérieure, dans lequel chaque plaque de support inclut au moins trois parties d'angle qui sont disposées respectivement sur les surfaces supérieures d'au moins trois des socles de support ;
positionner chacun d'une pluralité de composants de surface de construction (102) sur une certaine respective des plaques de support, dans lequel chaque composant de surface de construction inclut une surface supérieure (108), une surface inférieure (112) opposée à la surface supérieure (108), une pluralité de parties d'angle (110), et une pluralité de segments de bord extérieurs (116) disposés entre des parties d'angle adjacentes, dans lequel une première partie d'angle de la pluralité de parties d'angle de chaque composant de surface de construction est positionnée adjacente à une première partie d'angle de la pluralité de parties d'angle de chaque plaque de support, et dans lequel la première partie en relief de chaque plaque de support vient en contact avec la surface inférieure de chaque composant de surface de construction pour créer un espace (702) entre la surface supérieure de chaque plaque de support et la surface inférieure de chaque composant de surface de construction en un endroit adjacent à la périphérie extérieure, dans lequel l'espace s'ouvre entre le segment de bord extérieur de chaque plaque de support et le segment de bord extérieur de chaque composant de surface de construction ;
positionner des systèmes de fixation (500) dans les espaces ; et
fixer les plaques de support aux socles de support à l'aide des systèmes de fixation.

2. Procédé selon la revendication 1, dans lequel les systèmes de fixation incluent chacun une fixation filetée (508), et dans lequel la fixation inclut un vissage des fixations dans les socles de support.

3. Procédé selon l'une quelconque des revendications précédentes, comprenant en outre l'étape consistant à :
disposer un adhésif (400) sur une ou les deux parmi la surface supérieure de chaque plaque de support et/ou la surface inférieure de chaque carreau de surface, dans lequel l'adhésif fixe la surface inférieure de chaque carreau de surface à la surface supérieure de chaque plaque de support.

4. Procédé selon la revendication 3, dans lequel l'étape de disposition survient entre les étapes de placement et de positionnement.

5. Procédé selon l'une quelconque des revendications précédentes, dans lequel la première partie en relief (700) est adjacente à la première partie d'angle de la pluralité de parties d'angle (316) de chaque plaque de support.

6. Procédé selon l'une quelconque des revendications précédentes, dans lequel l'espace (702) s'étend entre les parties d'angle de chaque plaque de support et chaque composant de surface de construction vers la première partie en relief de chaque plaque de support.

7. Procédé selon l'une quelconque des revendications précédentes, dans lequel la première partie en relief (700) est adjacente à un emplacement sur un premier segment de bord extérieur de la pluralité de segments de bord extérieurs de chaque plaque de support.

8. Procédé selon l'une quelconque des revendications précédentes, dans lequel l'espace (702) s'étend à partir des segments de bord extérieurs vers la première partie en relief de chaque plaque de support.

9. Procédé selon l'une quelconque des revendications précédentes, dans lequel chaque plaque de support de chaque composant de surface de construction inclut en outre une structure de positionnement (324) fixée à un premier des segments de bord extérieurs et s'étendant à l'écart de la surface supérieure, dans lequel les structures de positionnement sont configurées pour positionner chaque composant de surface de construction sur la surface supérieure de chaque plaque de support correspondante.

10. Procédé selon l'une quelconque des revendications précédentes revendication, dans lequel chaque plaque de support est un élément sensiblement plan

qui s'étend à travers une totalité substantielle de la surface inférieure de chaque composant de surface de construction correspondant.

11. Procédé selon l'une quelconque des revendications précédentes, dans lequel chaque socle de support (201) inclut un élément de base (212) qui repose sur la surface fixe, un élément de support (216) et une section centrale qui interconnectent l'élément de base et l'élément de support, dans lequel les plaques de support sont disposées sur des surfaces supérieures des éléments de support des socles de support.

12. Procédé selon l'une quelconque des revendications précédentes, dans lequel les systèmes de fixation (500) incluent chacun un élément d'ancrage (504) et une fixation.

13. Procédé selon la revendication 12, dans lequel la fixation inclut l'extension de la fixation à travers l'élément d'ancrage de chaque système de fixation et jusque dans une surface supérieure d'un socle de support, dans lequel les éléments d'ancrage tournent sélectivement autour de fixations correspondantes jusque dans des espaces correspondants pour fixer les composants de surface de construction aux socles de support correspondants.

14. Procédé selon la revendication 13, dans lequel les éléments d'ancrage sont des rondelles.

15. Procédé selon la revendication 12, dans lequel les éléments d'ancrage incluent chacun une encoche (516) en leur sein, qui permet de libérer les composants de surface de construction des socles de support lorsque les éléments d'ancrage sont tournés autour des fixations pour aligner les encoches avec une partie d'angle des plaques de support.

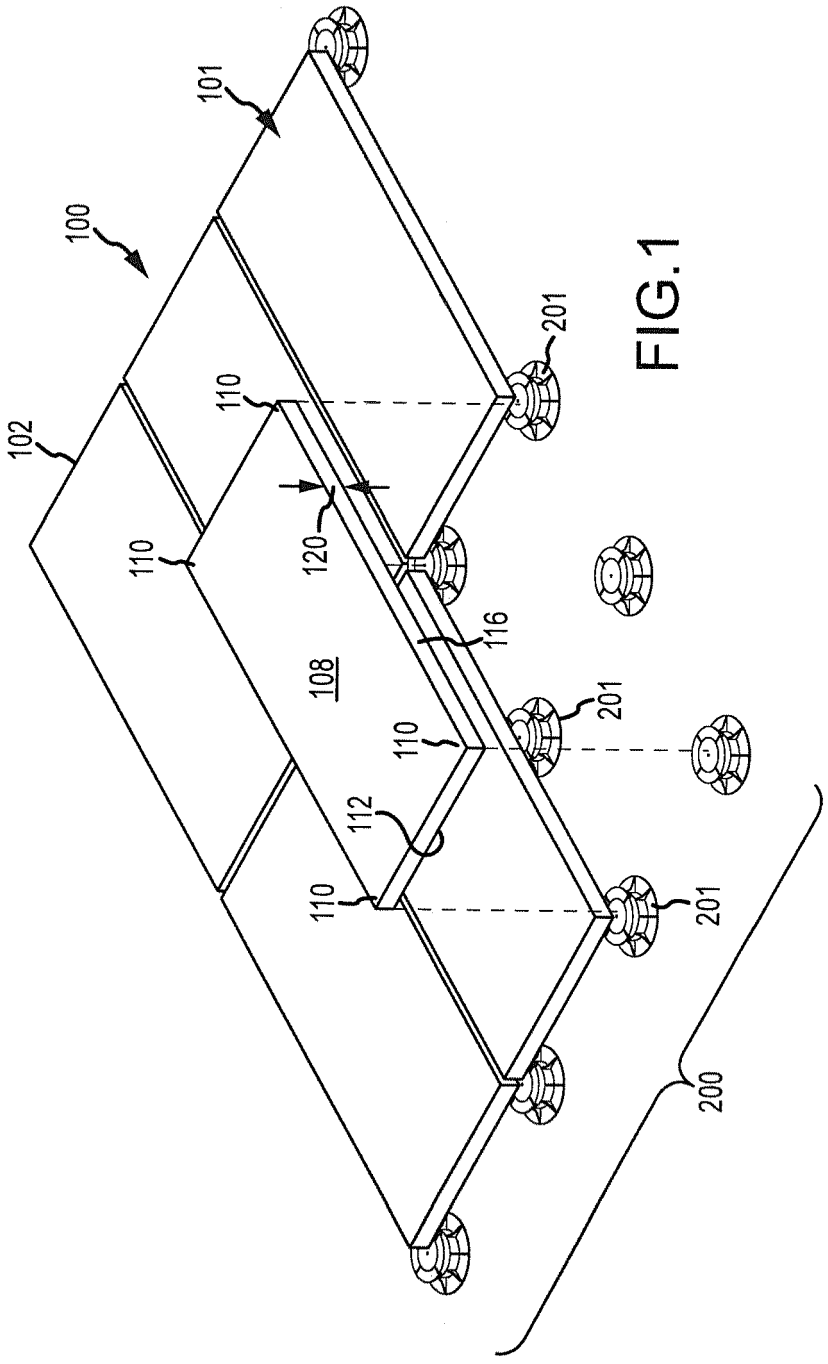


FIG.1

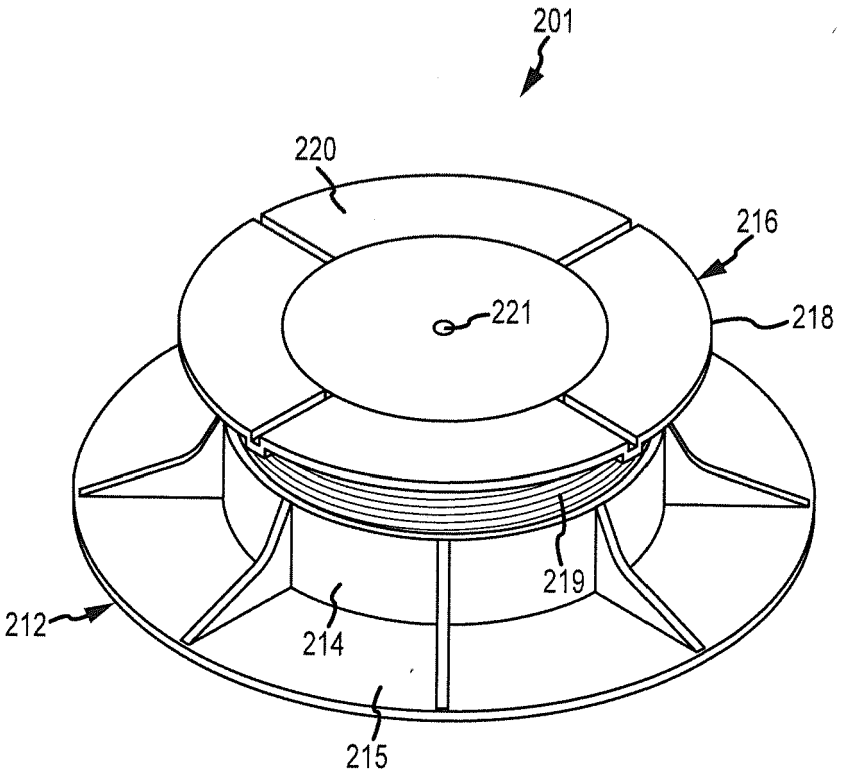


FIG.2

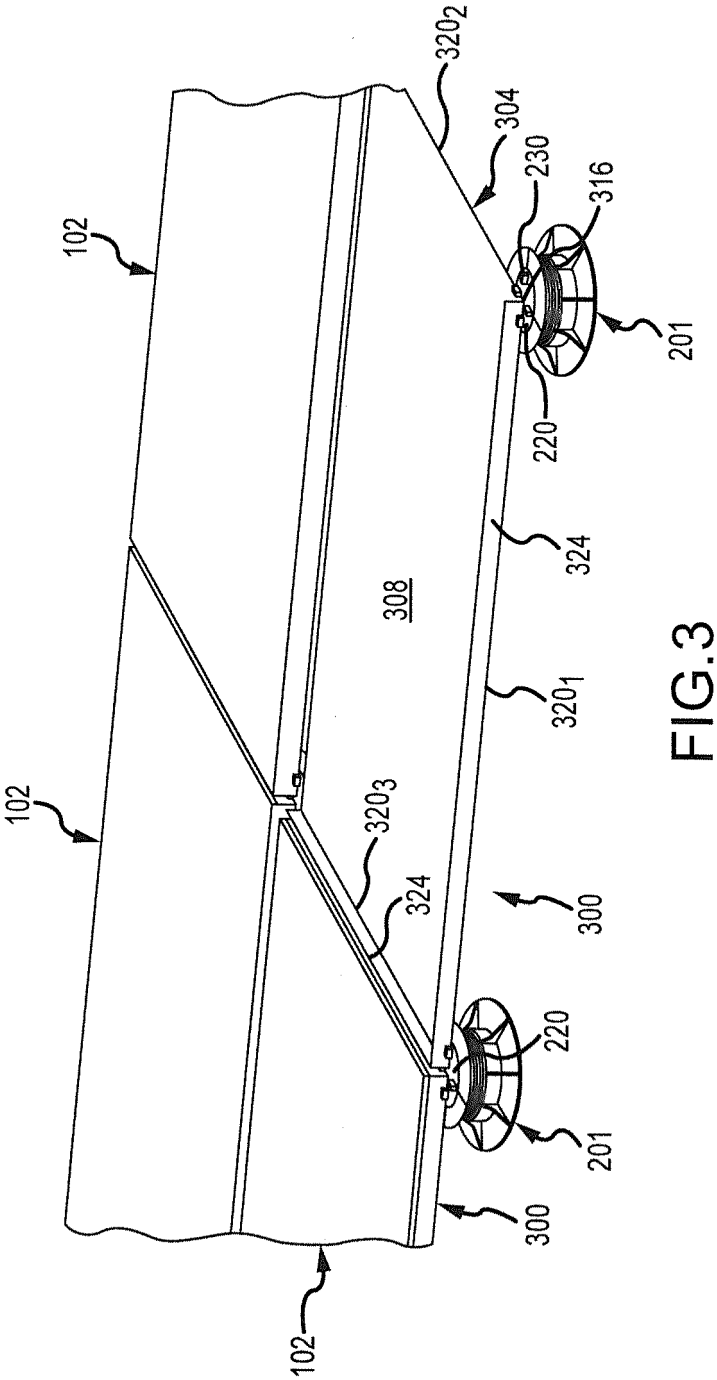

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FIG.3

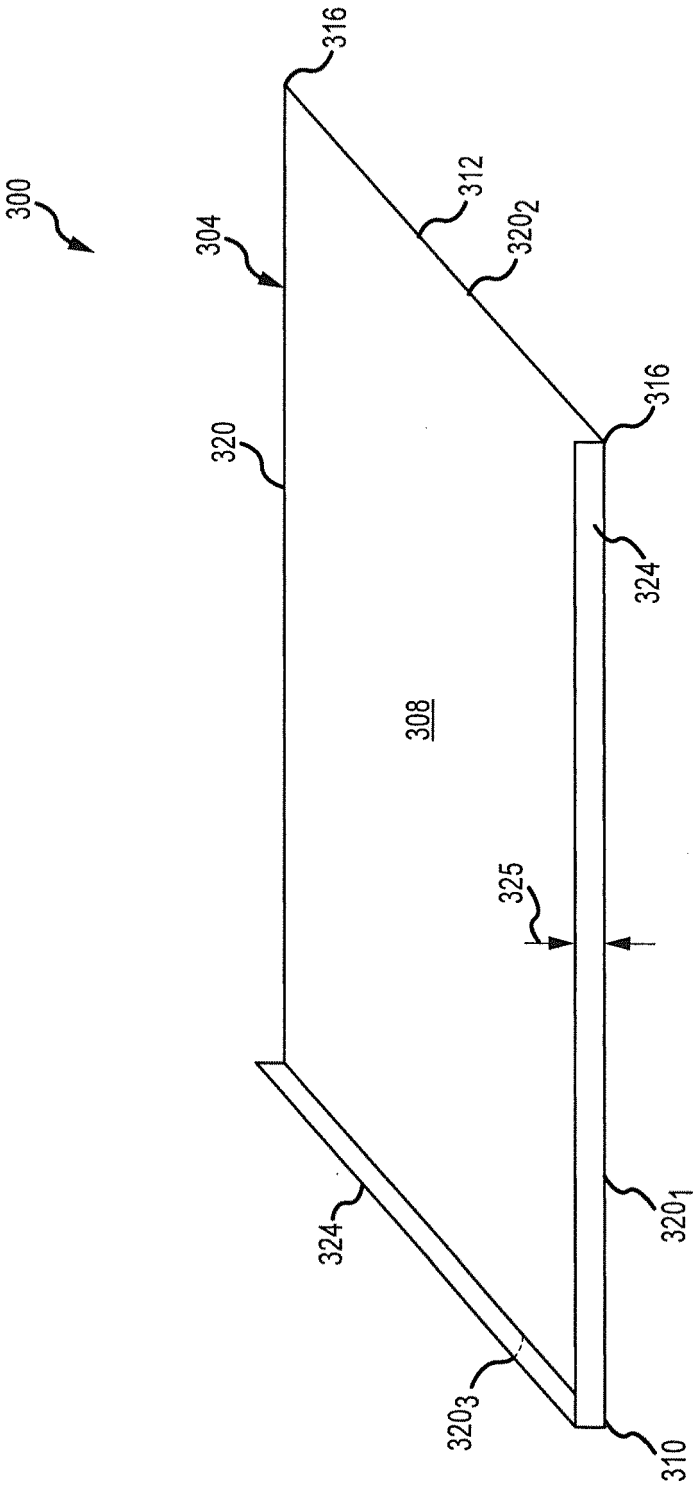


FIG.4

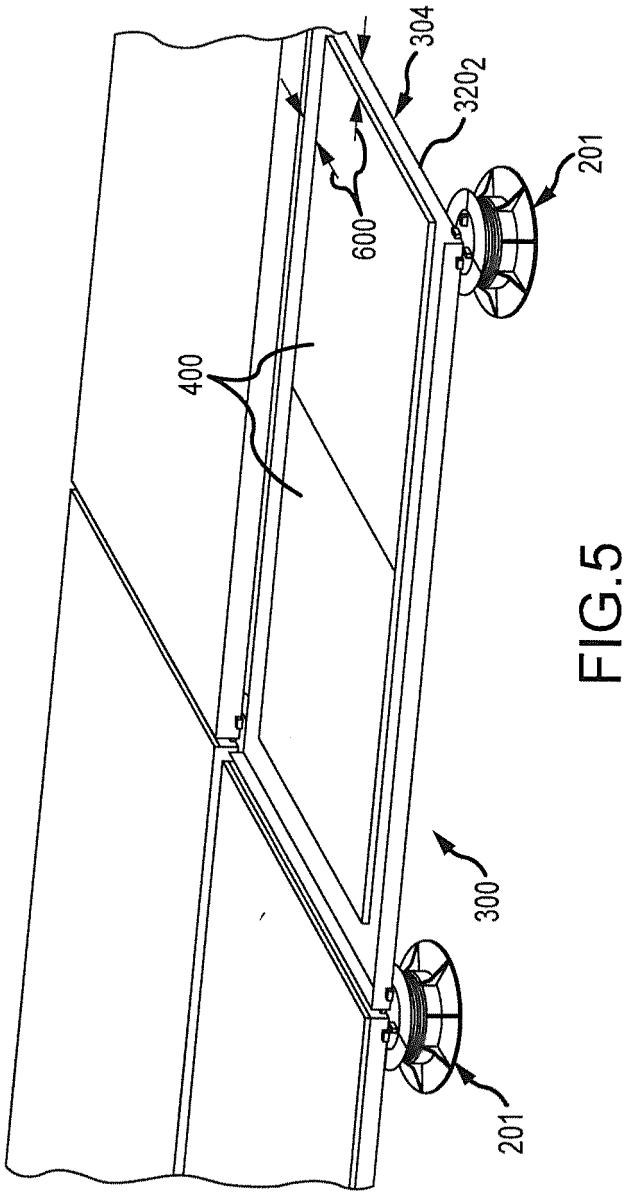


FIG.5

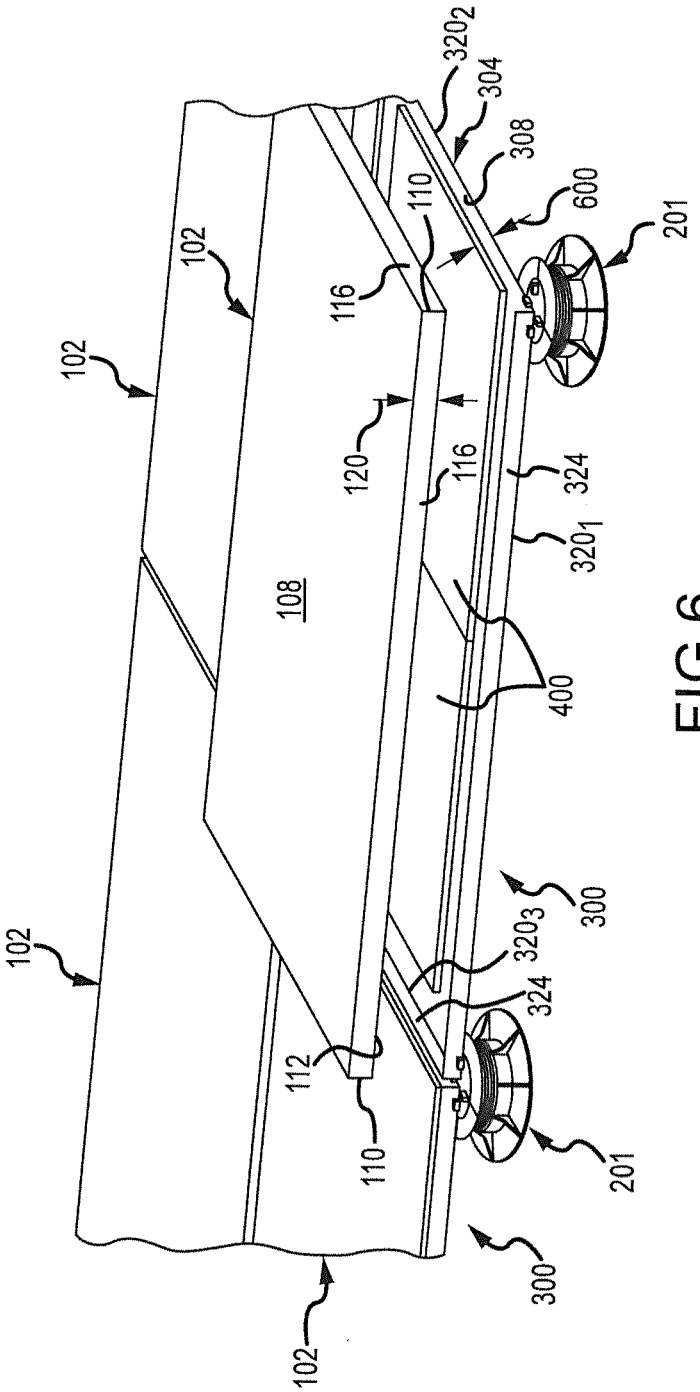

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FIG.6

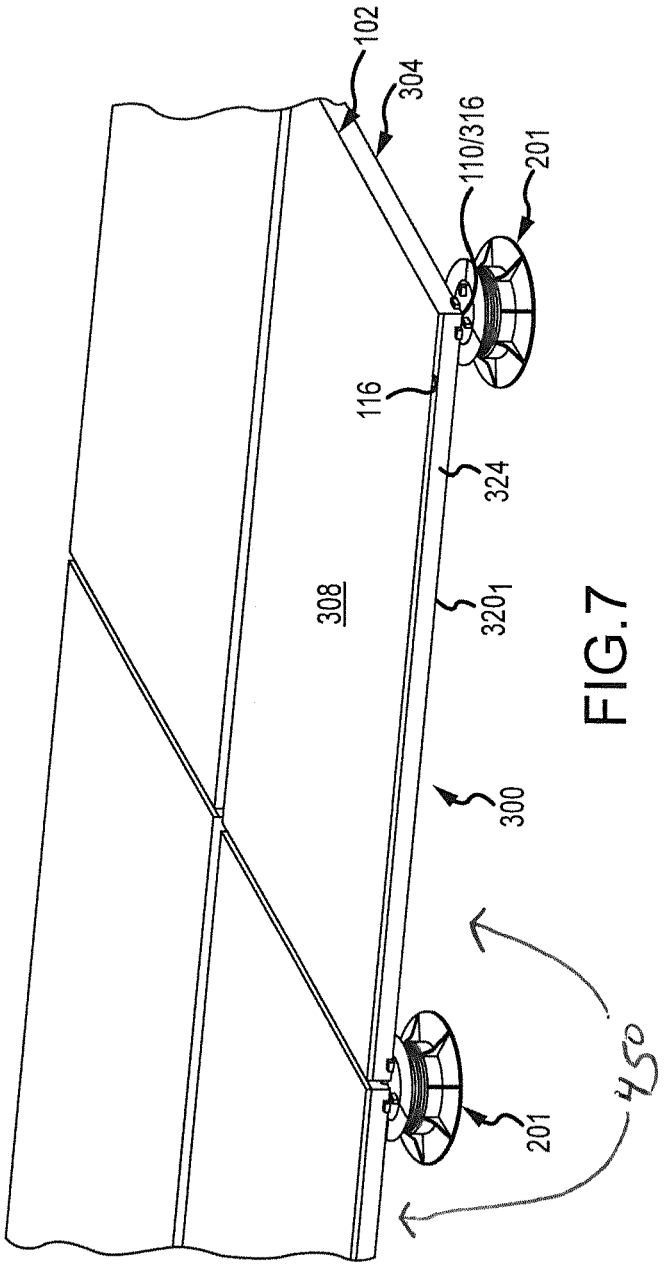


FIG.7

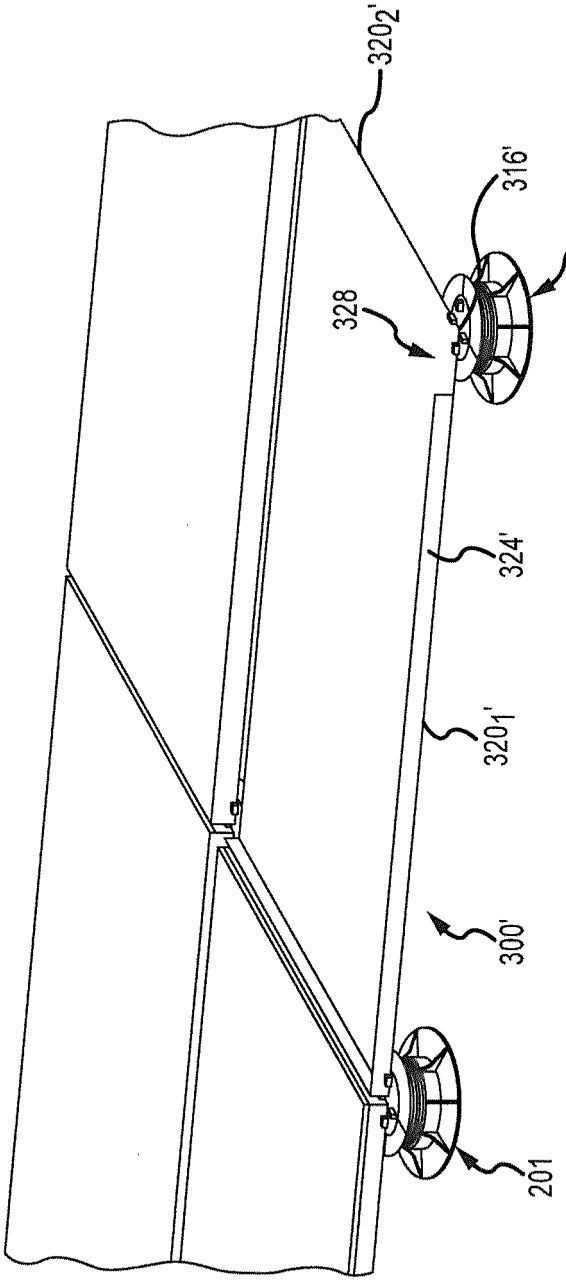


FIG.8

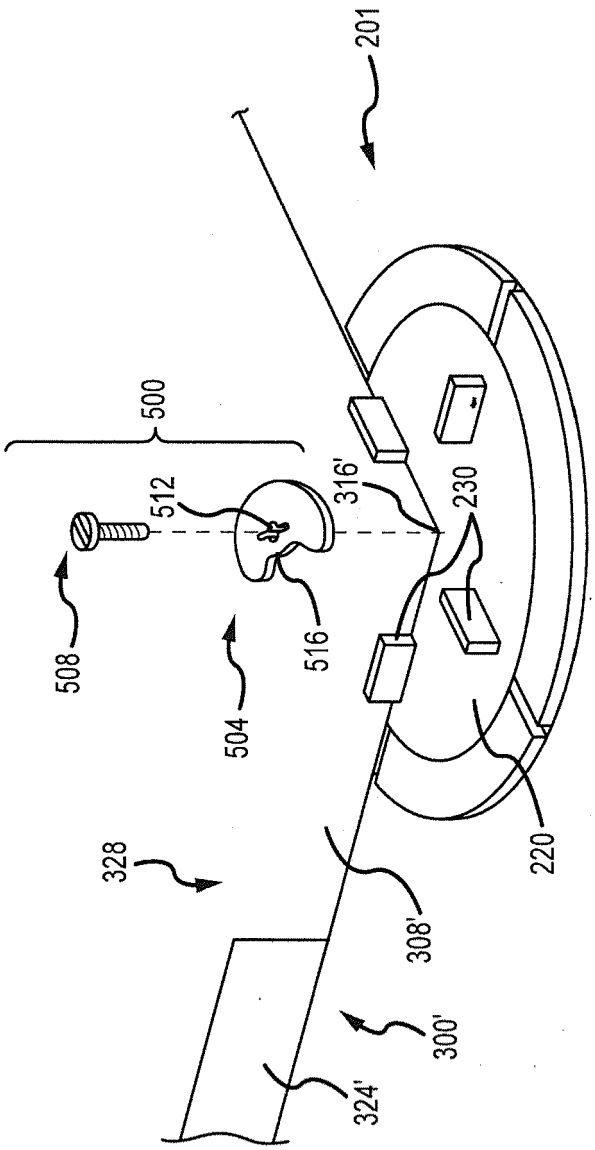


FIG.9a

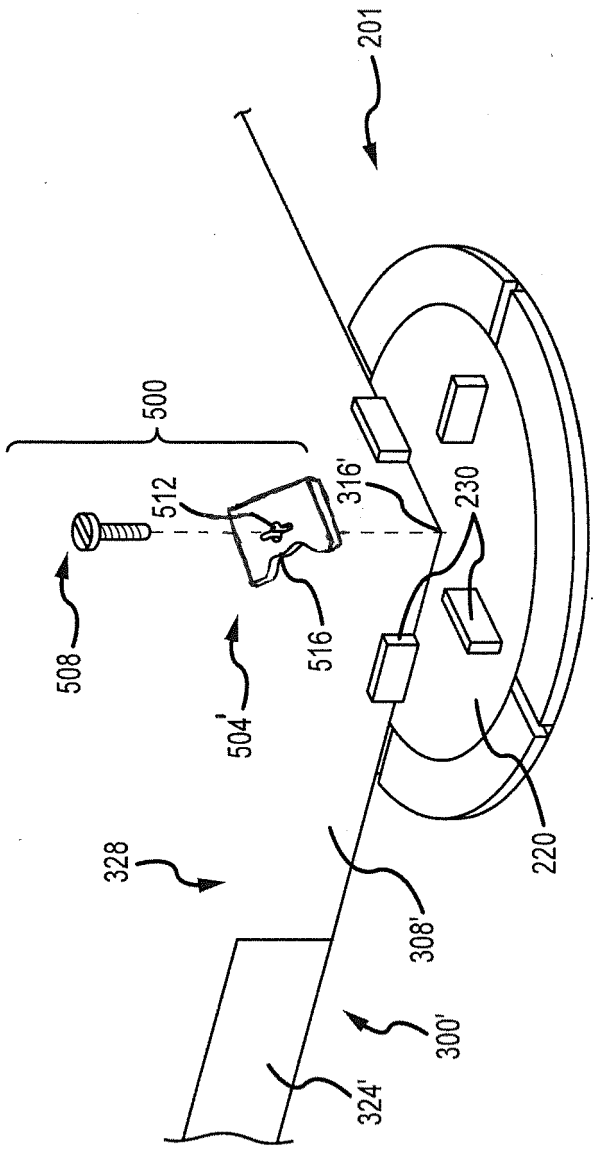


FIG.9b

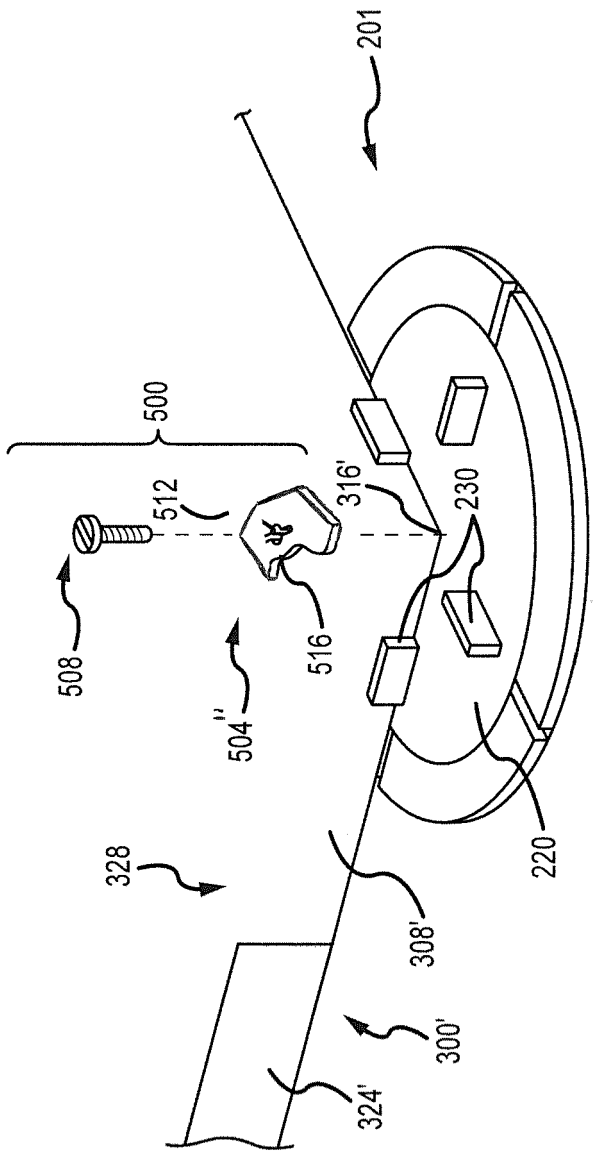


FIG.9c

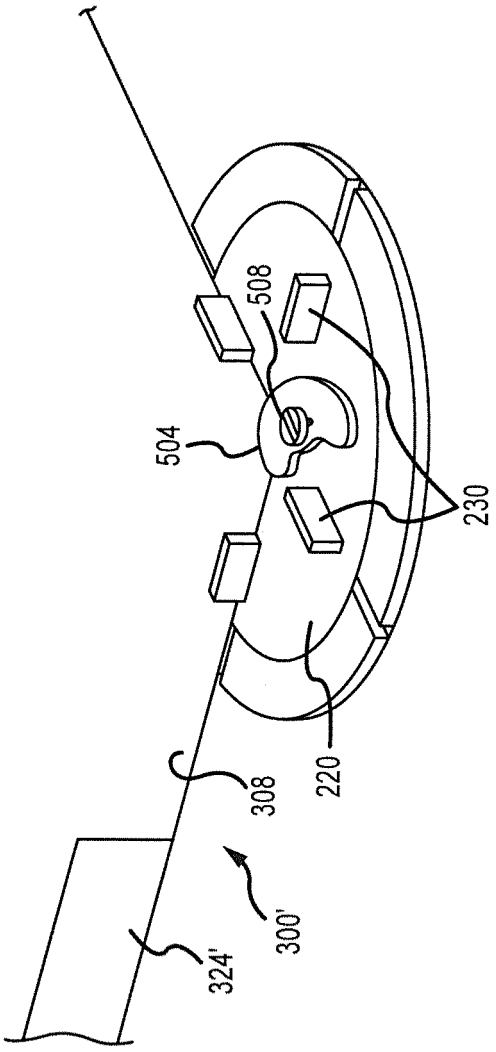


FIG.10

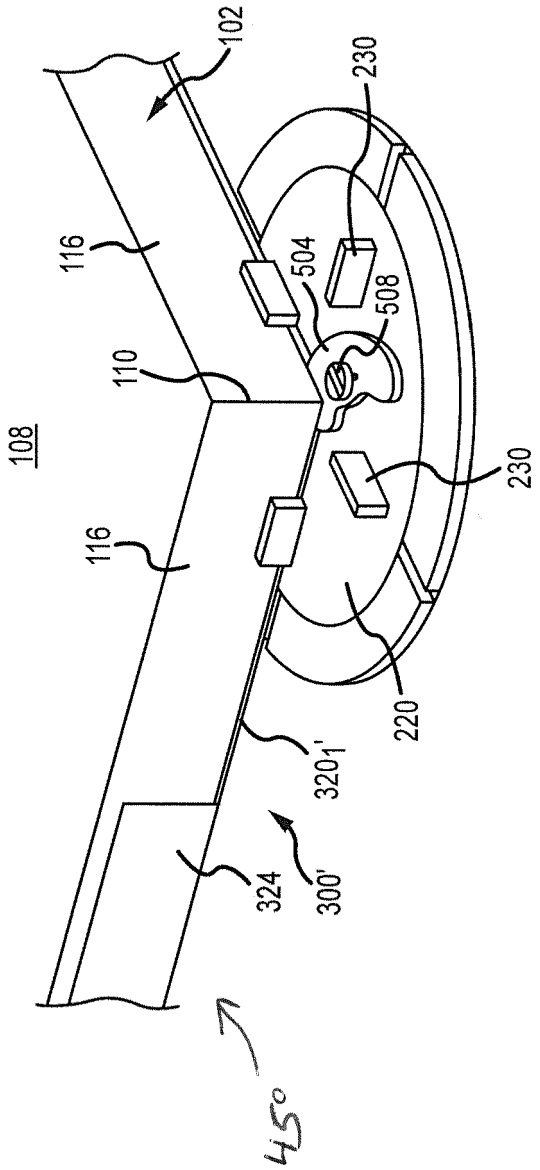


FIG.11

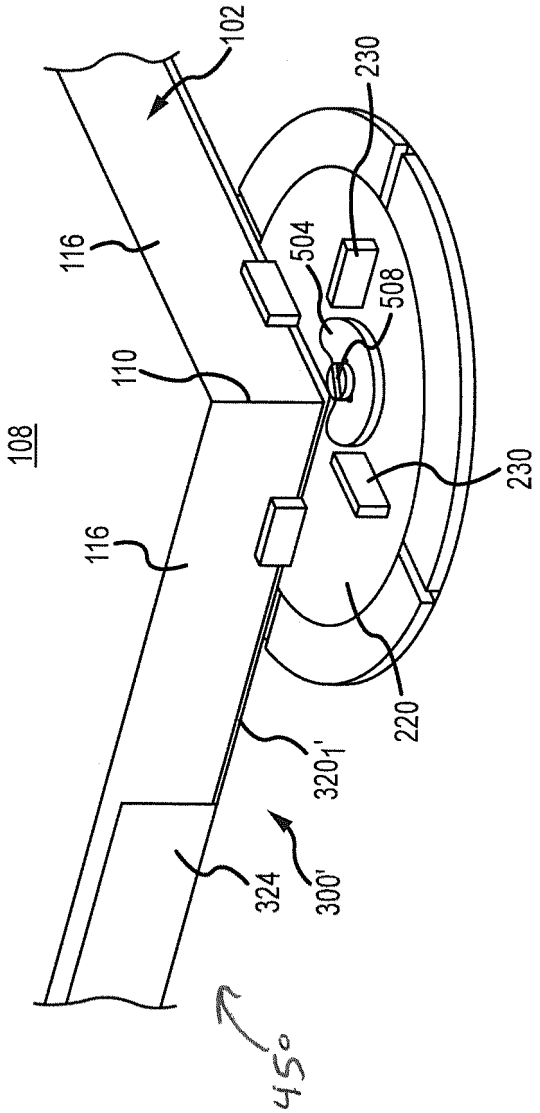


FIG.12

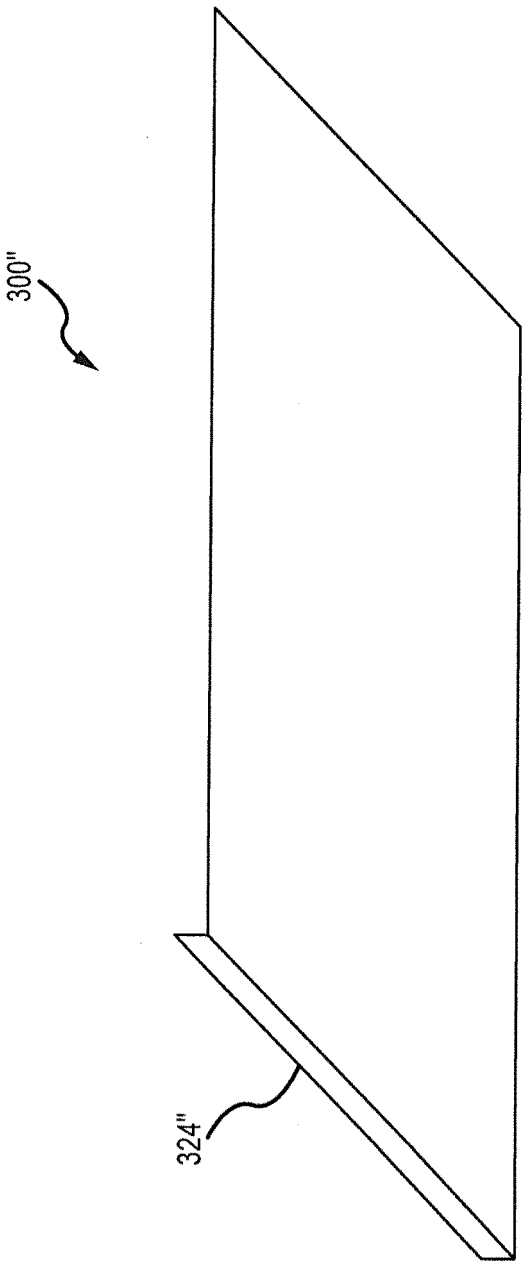


FIG.13

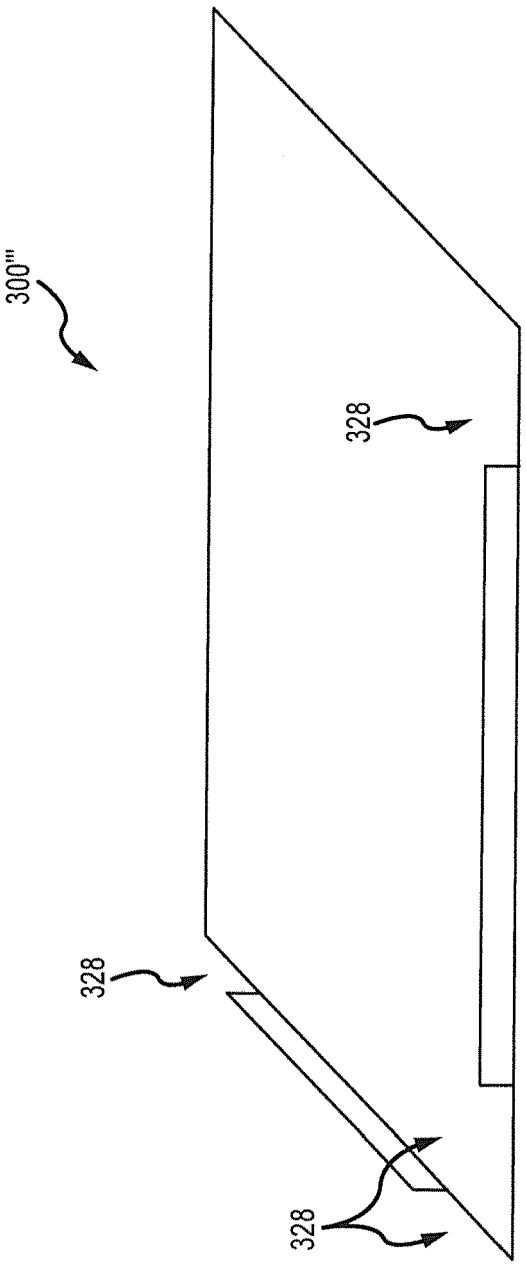


FIG.14

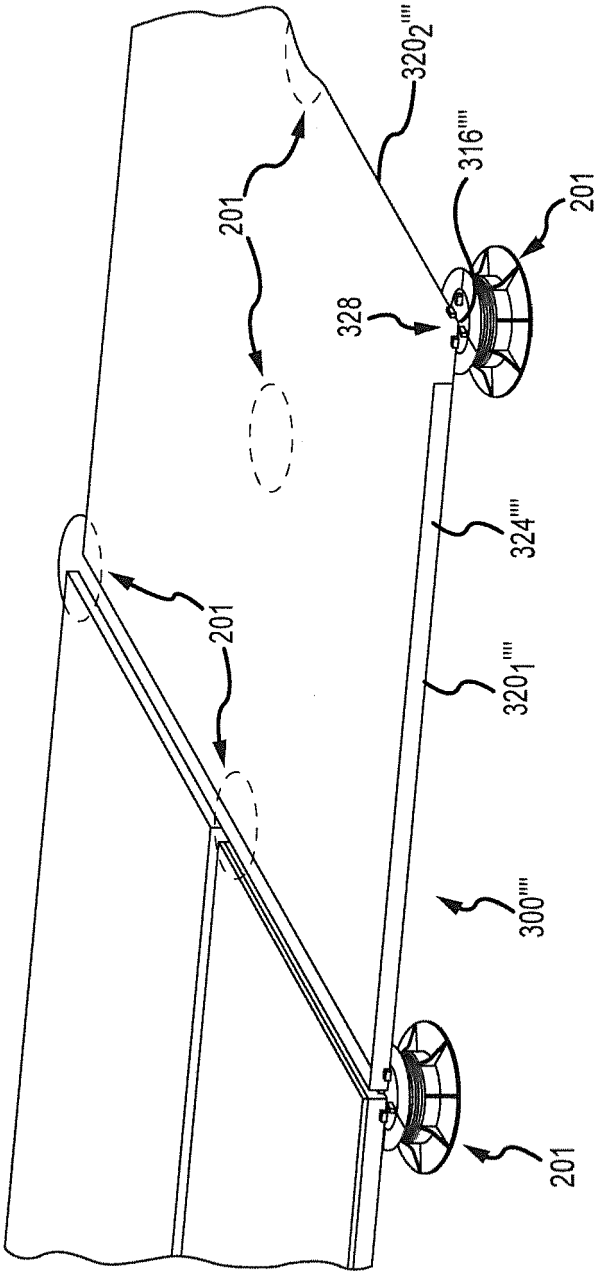


FIG.15

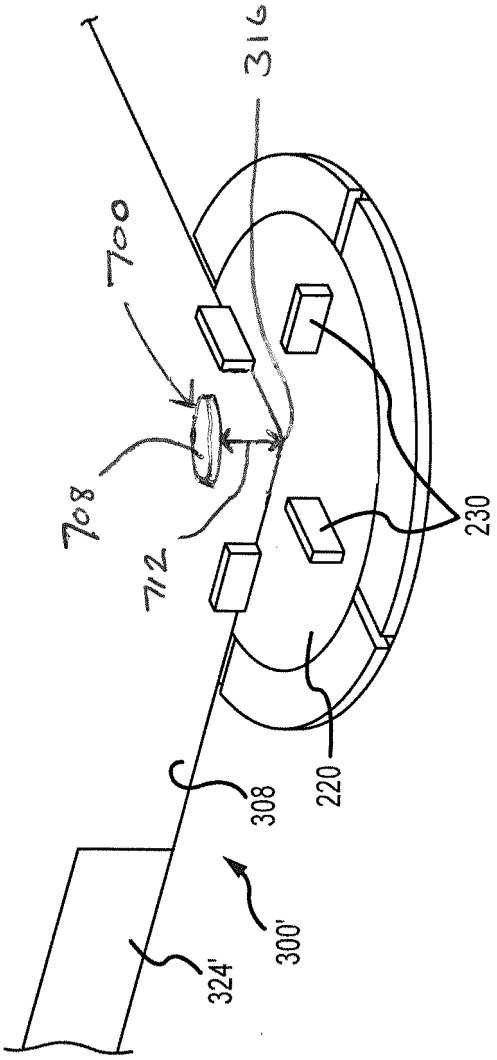


FIG. 16

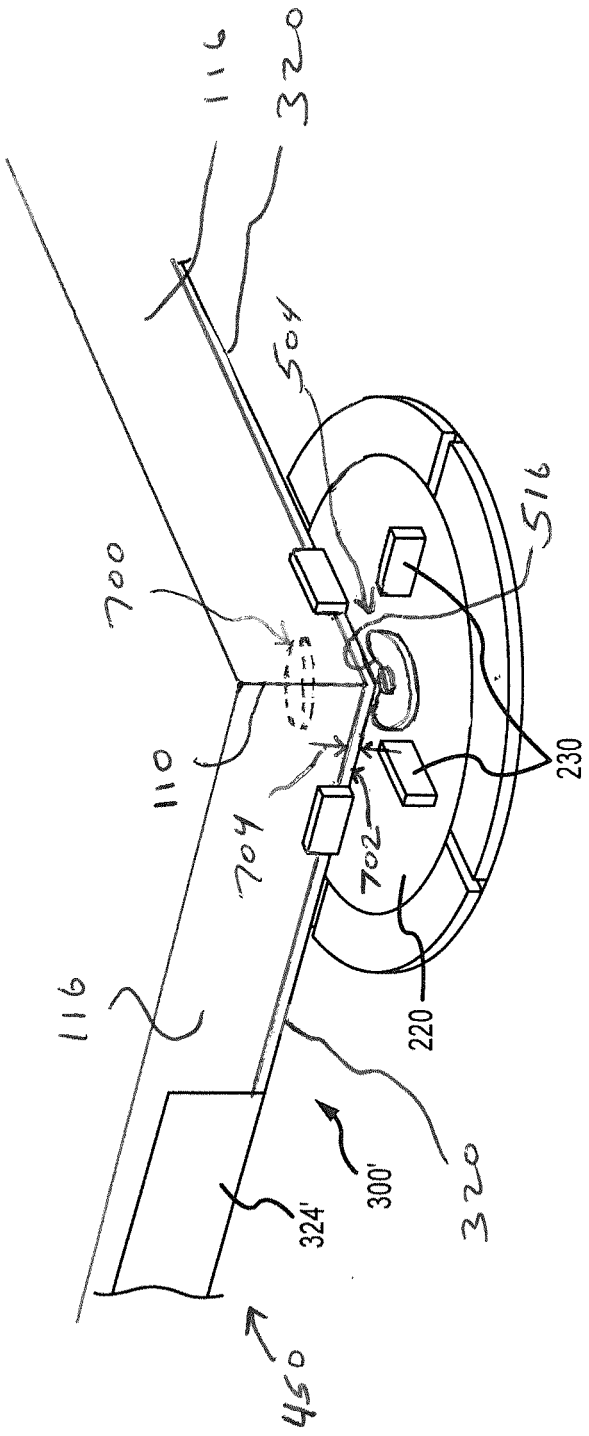


FIG. 17

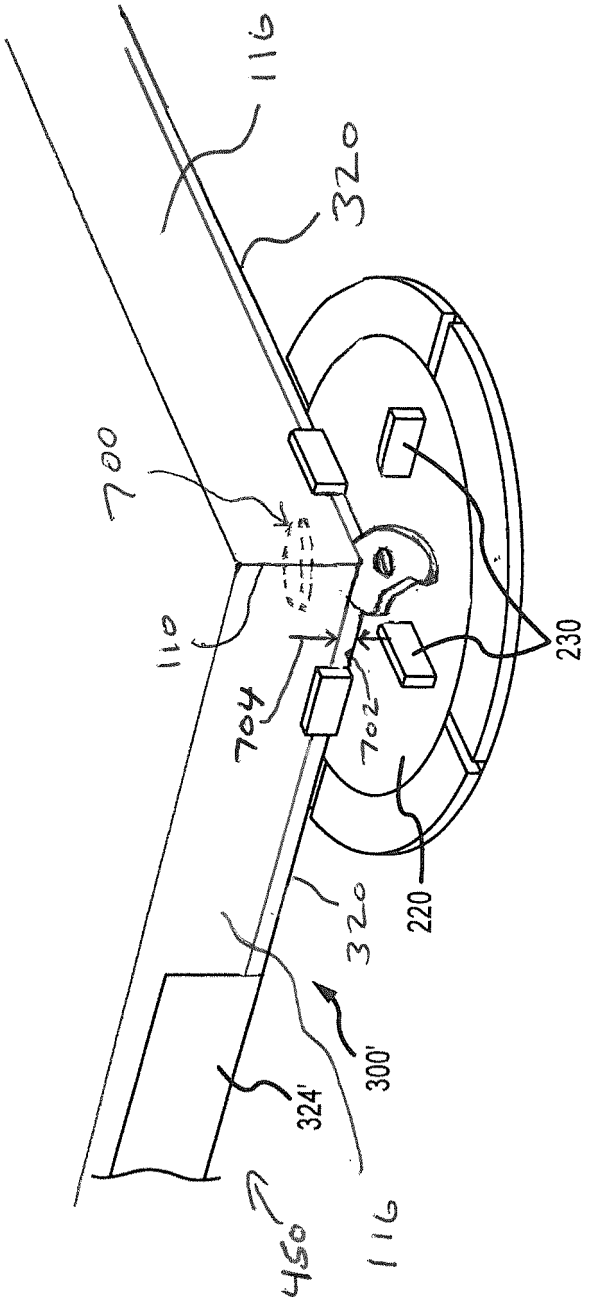


FIG. 18

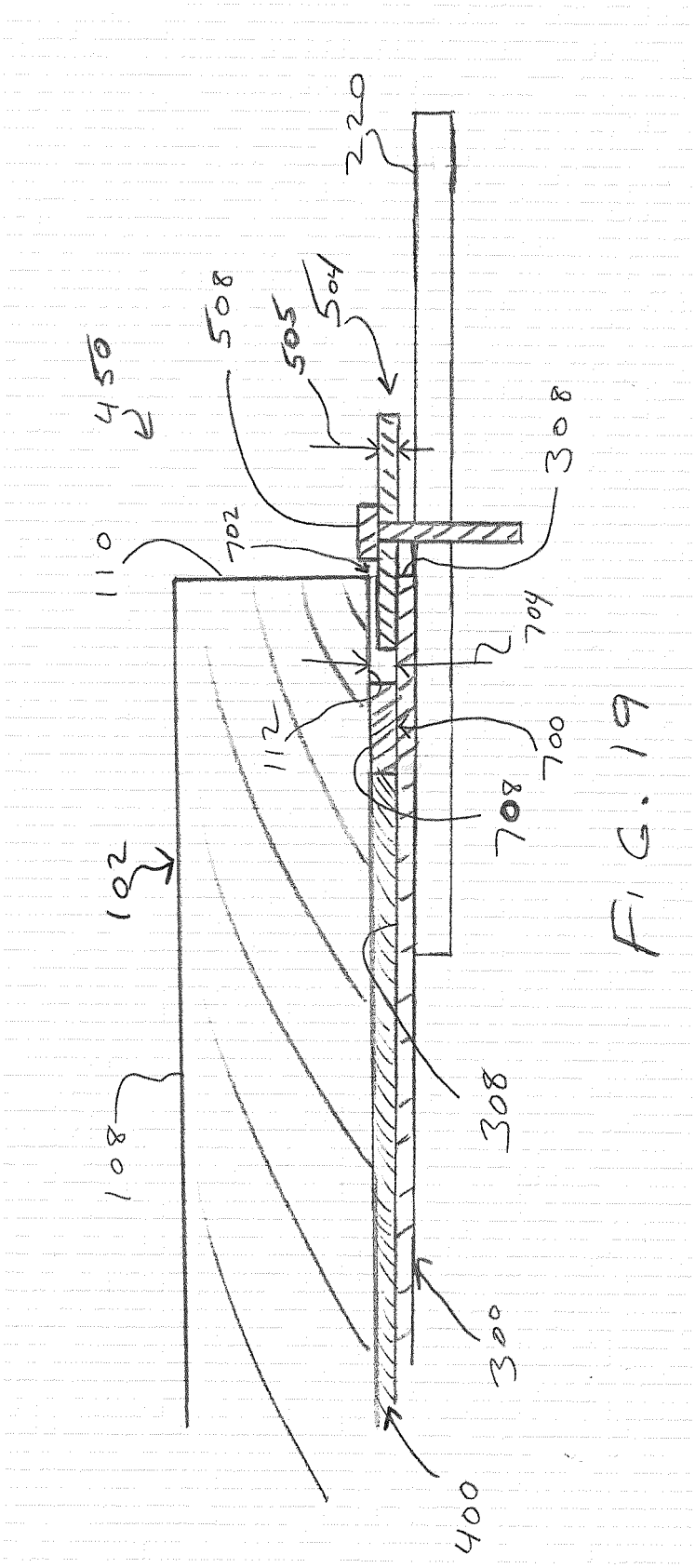

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FIG. 19

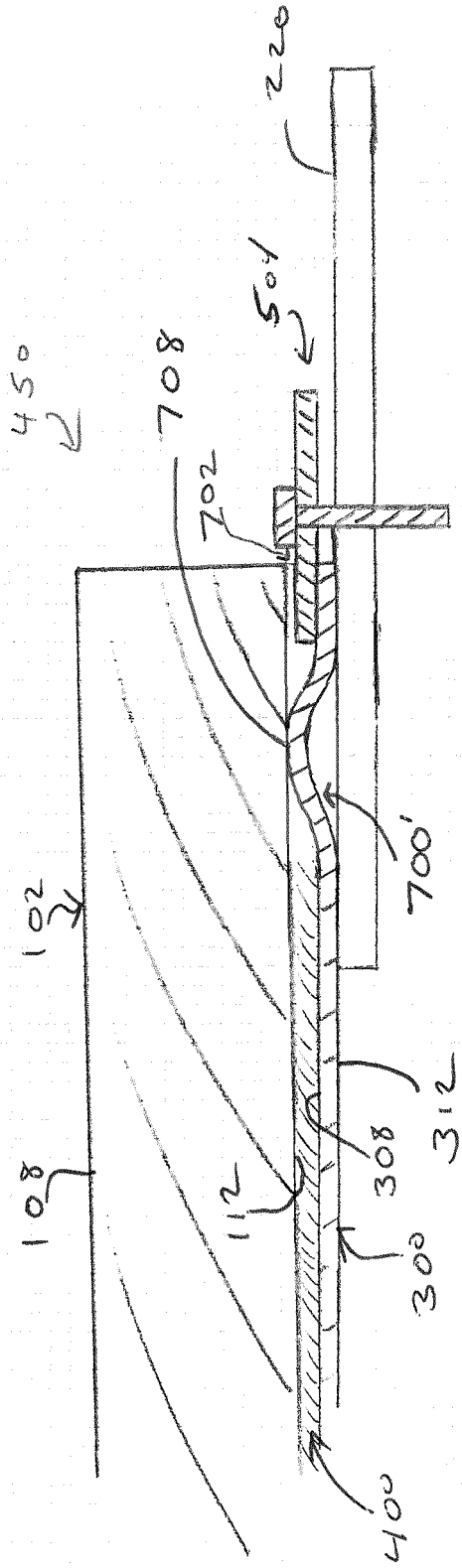


FIG. 20

REFERENCES CITED IN THE DESCRIPTION

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