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UNIVERSAL CLIPS FOR MOUNTING ELEVATOR GUIDE RAILS
- (57)

A universal clip (102-1, 102-2) for mounting guide rails of an elevator is disclosed. The universal clip (102-1, 102-2) includes a body (202-1, 202-2) adapted to support a guide rail (108) on a mounting bracket (110) and comprising at least one mounting hole (204, 604) to enable fastening with the mounting bracket (110). The

body (202-1, 202-2) is adapted to be aligned with respect to the guide rail (108) in one of a plurality of discrete positions, each of the plurality of discrete positions is based on at least one geometrical parameter of the guide rail (108).
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- FIGURE 1
- Processed by Luminess, 75001 PARIS (FR)
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Description

[0001] The present disclosure relates to elevators and more particularly, to universal clips for mounting elevator guide rails of different geometrical parameters, on a mounting bracket and, to an elevator guiding system having such universal clips.

[0002] Generally, guide rails are employed in an elevator system for guiding a movement of at least one of an elevator car and a counterweight within an elevator shaft. Such guide rails are usually supported on mounting brackets which are fastened to the walls of the elevator shaft. The guide rails are supported on the mounting brackets via mounting clips, such as sliding clips. Such clips are employed for supporting the guide rails and for transferring loads from at least the elevator car and the counterweight to the mounting brackets. Geometrical parameters of the guide rails to be deployed in the elevator system need to be selected based on various factors, such as speed of the elevator and/or the counterweight and a load capacity.

[0003] Currently, the mounting clips are designed and manufactured discretely for guide rails having different dimensional parameters. In particular, the dimensional parameters of a guide rail need to be considered as a design constraint for manufacturing the mounting clip to support such guide rail. The mounting clip designed for supporting a guide rail having a specific dimension cannot be deployed for supporting other guide rails with different dimensions. Therefore, the mounting clips must be designed based on the dimensions of the guide rails to be supported in the elevator system.

[0004] However, this substantially increases the overall complexity and manufacturing cost associated with the elevator system. Each mounting clip needs to be manufactured and designed with a different set of parameters based on the dimensions of the guide rail, and therefore overall manufacturing cost is substantially increased. Further, owing to the manufacturing of different mounting clips, managing supply chains for such mounting clips becomes a cumbersome and expensive task. Furthermore, the mounting brackets are also needed to be manufactured discretely for enabling the mounting of the guide rails with varied geometrical parameters using different mounting clips. This further increases the overall cost associated with the elevator system.

[0005] Therefore, there is a need for a mounting clip to enable the mounting of the guide rails of different geometrical parameters, thereby eliminating the above-mentioned associated shortcomings.

[0006] It is in particular the object of the invention to submit universal clips for mounting guide rails, of an elevator, having different geometrical parameters, thereby eliminating the requirement of distinct universal clips for mounting guide rails with different geometrical parameters. According to the invention, this object is solved by universal clips having the features of claim 1 and an elevator guiding unit having the features of claim 13.

[0007] The universal clip for mounting guide rails of an elevator is disclosed in the present invention. The universal clip includes a body adapted to support a guide rail on a mounting bracket and comprising at least one mounting hole to enable fastening with the mounting bracket. The body is adapted to be aligned with respect to the guide rail in one of a plurality of discrete positions, each of the plurality of discrete positions is based on at least one geometrical parameter of the guide rail.

[0008] As mentioned, the body may be aligned with respect to the guide rail in one of the plurality of discrete positions based on at least one geometrical parameter of such guide rail. This eliminates the requirement of manufacturing discrete mounting clips for supporting different guide rails. In particular, based on the geometrical parameters of the guide rail, the universal clip may be mounted on the mounting bracket in one of the plurality of discrete positions to support such guide rail. Therefore, rendering the requirement for any constructional alteration in the clip, i.e., the universal clip, to support different guide rails. This reduces the overall complexity and manufacturing cost associated with the mounting clips and the elevator system. Further, owing to the manufacturing of universal mounting clips for different guide rails, managing supply chains for such clips becomes an easier and less expensive task. Therefore, the universal clips of the present disclosure are efficient, durable, flexible in implementation, cost-effective, and convenient.

[0009] In an embodiment, the at least one geometrical parameter comprises at least one of a size of the guide rail and a profile of the guide rail.

[0010] In an embodiment, the body comprises a protruded portion extending from one side of the body. The protruded portion is adapted to be engaged with the guide rail to hold the guide rail on the mounting bracket.

[0011] Preferably, the protruded portion includes a first inclined portion extending from one side of the body and a second inclined portion extending from the first inclined portion. The second inclined portion includes a clamping end adapted to clamp the guide rail on the mounting bracket.

[0012] Preferably, the body includes a plurality of mounting holes to enable fastening in the plurality of discrete positions with respect to the guide rail.

[0013] Preferably, the body is adapted to be fastened to the mounting bracket through one of the plurality of mounting holes to align in a discrete position, from among the plurality of discrete positions, with respect to the guide rail based on the at least one geometrical parameter of the guide rail.

[0014] Preferably, each of the plurality of mounting holes is adapted to receive a fastening member to fasten the body with the mounting bracket.

[0015] In another embodiment, the body includes a plurality of protrusions extending from sides of the body and a mounting hole to enable fastening of the body with the mounting bracket in the plurality of discrete positions.

[0016] In an embodiment, the mounting hole is eccen-

trically formed with respect to a central axis of the body. Such location of the mounting hole enables the body to be mounted in the plurality of discrete positions on the mounting bracket.

[0017] In an embodiment, the mounting hole is formed in proximity to at least one of the plurality of protrusions.

[0018] Preferably, each of the plurality of protruded portions includes a first inclined portion extending from one side of the body and a second inclined portion extending from the first inclined portion. The second inclined portion includes a clamping end adapted to clamp the guide rail on the mounting bracket.

[0019] Preferably, the mounting hole is adapted to receive a fastening member to fasten the body with the mounting bracket.

[0020] Preferably, the body is adapted to be rotated, in one of the plurality of discrete positions, about a central axis to engage one of the plurality of protrusions with the guide rails based on the at least one geometrical parameter of the guide rail.

[0021] Preferably, the body is formed of steel.

[0022] The object mentioned above is also solved by an elevator guiding unit including at least one universal clip. The elevator guiding unit includes a guide rail for guiding an elevator car within an elevator shaft. Further, the elevator guiding unit includes at least one mounting bracket for supporting the guide rail. The elevator guiding unit includes the at least one universal clip mounting the guide rail on the at least one mounting bracket.

[0023] Additional advantages, features, and details of the invention result using the following description of exemplary embodiments and using drawings in which the same or functionally identical elements are provided having identical reference signs.

[0024] To further clarify advantages and features of the present invention, a more particular description of the invention will be rendered by reference to specific embodiments thereof, which is illustrated in the appended drawings. It is appreciated that these drawings depict only typical embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail with the accompanying drawings.

[0025] These and other features, aspects, and advantages of the present invention will become better understood when the following detailed description is read with reference to the accompanying drawings in which like characters represent like parts throughout the drawings, wherein:

Figure 1 illustrates a schematic view of an elevator guiding unit having universal clips, according to an embodiment of the present disclosure;

Figure 2 illustrates an isometric view of a universal clip, according to an embodiment of the present disclosure;

Figure 3 illustrates a planar view of universal clips attached to a mounting bracket for supporting a guide rail, according to an embodiment of the present disclosure;

Figure 4 illustrates an exploded view of the elevator guiding unit, according to an embodiment of the present disclosure;

Figures 5a-5d illustrate planar views of the elevator guiding unit depicting a plurality of discrete positions of the universal clips to mount the guide rails with different geometrical parameters, according to an embodiment of the present disclosure;

Figure 6 illustrates an isometric view of a universal clip, according to another embodiment of the present disclosure;

Figure 7 illustrates a planar view of universal clips attached to the mounting bracket for supporting the guide rail, according to an embodiment of the present disclosure;

Figure 8 illustrates an exploded view of the elevator guiding unit, according to an embodiment of the present disclosure; and

Figures 9a-9d illustrate planar views of the elevator guiding unit depicting a plurality of discrete positions of the universal clips to mount the guide rails with different geometrical parameters, according to an embodiment of the present disclosure.

[0026] Further, skilled artisans will appreciate that elements in the drawings are illustrated for simplicity and may not have necessarily been drawn to scale. Furthermore, in terms of the construction of the device, one or more components of the device may have been represented in the drawings by conventional symbols, and the drawings may show only those specific details that are pertinent to understanding the embodiments of the present invention so as not to obscure the drawings with details that will be readily apparent to those of ordinary skill in the art having benefit of the description herein.

[0027] For the purpose of promoting an understanding of the principles of the invention, reference will now be made to the embodiment illustrated in the drawings and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alterations and further modifications in the illustrated system, and such further applications of the principles of the invention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates. Unless otherwise defined, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary

skilled in the art to which this invention belongs. The system, methods, and examples provided herein are illustrative only and not intended to be limiting.

[0028] Any particular and all details set forth herein are used in the context of some embodiments and therefore should not be necessarily taken as limiting factors to the attached claims. The attached claims and their legal equivalents can be realized in the context of embodiments other than the ones used as illustrative examples in the description below.

[0029] Embodiments of the present invention will be described below in detail with reference to the accompanying drawings.

[0030] Figure 1 illustrates a schematic view of an elevator guiding unit 100 having universal clips 102, according to an embodiment of the present disclosure. The elevator guiding unit 100 may be employed for guiding at least one of an elevator car 104 and a counterweight (not shown) in an elevator shaft 106 of a building. In an embodiment, the elevator guiding unit 100 may include, but is not limited to, at least one guide rail 108, at least one mounting bracket 110, and at least one universal clip 102.

[0031] The guide rail 108 may be embodied as one of a car guide rail for enabling movement of the elevator car 104 and a counterweight guide rail for enabling movement of the counterweight. In the illustrated embodiment, the elevator guiding unit 100 may include a plurality of guide rails, such as guide rails 108, adapted to enable movement of at least one of the elevator car 104 and the counterweight within the elevator shaft 106. In an embodiment, the plurality of guide rails may interchangeably be referred to as the guide rails 108, and individually be referred to as the guide rail 108, without departing from the scope of the present disclosure.

[0032] In the illustrated embodiment, the elevator guiding unit 100 may include a plurality of mounting brackets, such as mounting brackets 110, to support the plurality of guide rails 108. In an embodiment, the plurality of mounting brackets may interchangeably be referred to as the mounting brackets 110, and individually be referred to as the mounting bracket 110, without departing from the scope of the present disclosure. Each of the mounting brackets 110 may be fastened to walls 112 defining the elevator shaft 106. In an embodiment, the mounting bracket 110 may be embodied as one of Omega bracket, Z-bracket, L-bracket, Tie bracket, and TZ-bracket. It should be appreciated by a person skilled in the art that different types of brackets as explained in the present disclosure should not be construed as limiting, and other types of brackets can also be mounted on the elevator guiding unit 100, without departing from the scope of the present disclosure.

[0033] Each of the guide rails 108 may be attached to the mounting bracket 110 via the universal clip 102. In an embodiment, the universal clip 102 may be adapted to transfer load from at least one of the elevator car 104 and the counterweight to the mounting bracket 110. Further, the universal clip 102 may be embodied as a sliding

clip and adapted to allow a relative movement of the guide rail 108 with respect to the mounting bracket 110 under loads in a vertical direction.

[0034] In one instance, the mounting brackets 110 undergo a first load condition in which the load is transferred from at least one of the elevator car 104 and the counterweight via the universal clips 102. In another instance, the mounting brackets 110 undergo a second load condition in which vertical loads due to building contraction may result in a relative movement between the mounting brackets 110 and the guide rails 108. In such an instance, when building contraction takes place, the universal clips 102 may allow movement of the guide rails 108 with respect to the mounting brackets 110 and thereby, preventing deformation of the guide rails 108.

[0035] In an embodiment, the universal clip 102 may be adapted to support the guide rails 108 having different geometrical parameters. In one exemplary embodiment, the guide rails may be categorized as T45, T50, T70, T75, T78, T82, T89, T90, T114, T127, T140, etc. based on geometrical parameters, such as a width of a base plate of the guide rail 108. The universal clip 102 may be adapted to be employed for supporting different guide rails 108 on the mounting brackets 110 without altering the constructional aspects of the universal clip 102. Therefore, the universal clip 102 eliminates the requirement of manufacturing discrete clips for supporting different guide rails 108.

[0036] In an embodiment, the universal clip 102 may include a body 202 adapted to support the guide rail 108 of different geometrical parameters on the mounting bracket 110. Constructional and operational details of the universal clips 102 are explained in detail in the subsequent sections of the present disclosure.

[0037] Figure 2 illustrates an isometric view of a universal clip 102-1, according to an embodiment of the present disclosure. In the illustrated embodiment, the universal clip 102, such as the universal clip 102-1, may include the body 202, such as a body 202-1, adapted to support the guide rail 108 on the mounting bracket 110. In an embodiment, the body 202-1 may be formed of steel, without departing from the scope of the present disclosure.

[0038] The body 202-1 may be adapted to be aligned with respect to the guide rail 108 in one of a plurality of discrete positions. Each of the plurality of discrete positions may be based on at least one geometrical parameter of the guide rail 108. In an embodiment, the geometrical parameter may include, but is not limited to, at least one of a size of the guide rail 108 and a profile of the guide rail 108. In an example, the size of guide rail 108 may be defined by a width of a base plate of the guide rail. In such an example, the guide rails 108 may be categorized as T45, T50, T70, T75, T78, T82, T89, T90, T114, T127, T140, etc. based on the width of the base plate of the guide rail 108. The base plate of the guide rail 108 may be adapted to be positioned on the mounting bracket 110 and subsequently, supported thereon by the

universal clip 102.

[0039] The body 202-1 may include, but is not limited to, a plurality of mounting holes 204 to enable fastening with the mounting bracket 110. In the illustrated embodiment, the plurality of mounting holes 204 may individually be referred to as the hole 204-1, the hole 204-2, the hole 204-3, and the hole 204-4. Referring to Figure 2, in the illustrated embodiment, the body 202-1 may include four mounting holes 204-1, 204-2, 204-3, 204-4. However, it should not be construed as limiting, and the body 202-1 may include multiple mounting holes, without departing from the scope of the disclosure.

[0040] The mounting holes 204 of the body 202-1 may enable fastening of the universal clip 102-1 in the plurality of discrete positions with respect to the guide rail 108. The body 202-1 may be adapted to be fastened to the mounting bracket 110 through one of the plurality of mounting holes 204 to align in a discrete position, from among the plurality of discrete positions, with respect to the guide rail 108 based on the at least one geometrical parameter of the guide rail 108.

[0041] In an embodiment, each of the mounting holes 204 may be formed at different locations with respect to each other on the body 202-1 of the universal clip 102-1. At least one of the mounting holes 204 may be selected based on the geometrical parameter of the guide rail 108 to be supported on the mounting bracket 110 via the universal clip 102-1. A location of each of the mounting holes 204 may be defined on the body 202-1 in a manner that the universal clip 102-1 may be fastened through one of the mounting holes 204 to the mounting bracket 110 and, firmly holds the guide rail 108 having a specific geometrical parameter thereon.

[0042] Each of the mounting holes 204 may be adapted to receive a fastening member 302 (as shown in Figure 3) to fasten the body 202-1 with the mounting bracket 110. In an embodiment, the mounting bracket 110 may include at least one receiving hole to be aligned with the mounting hole 204 of the universal clip 102-1. One of the mounting holes 204 may be selected based on the geometrical parameters of the guide rail 108 and subsequently, the body 202-1 may be positioned on the mounting bracket 110 in a manner that the selected mounting hole 204 may align with the receiving hole of the mounting bracket 110. Further, the fastening member 302 may be inserted through the selected mounting hole 204 of the body 202-1 and the receiving hole of the mounting bracket 110 to fasten the universal clip 102-1 with the mounting bracket 110. The fastening member 302, such as a bolt, may be secured with the body 202-1 and the mounting bracket 110 via a nut 401 and a washer 403 (as shown in Figure 4), without departing from the scope of the present disclosure.

[0043] Further, the body 202-1 may include a protruded portion 206 extending from one side, such as a side 203, of the body 202-1. The protruded portion 206 may be adapted to be engaged with the guide rail 108 to hold the guide rail 108 on the mounting bracket 110. The body

202-1 may be fastened to the mounting bracket 110 via one of the mounting holes 204 in a manner that the protruded portion 206 firmly clamps the guide rail 108 on the mounting bracket 110.

[0044] In an embodiment, the protruded portion 206 may include a first inclined portion 206-1 and a second inclined portion 206-2. The first inclined portion 206-1 may extend from one side, such as the side 203, of the body 202-1. The second inclined portion 206-2 may extend from the first inclined portion 206-1. The second inclined portion 206-2 may include a clamping end 208 adapted to clamp the guide rail 108 on the mounting bracket 110.

[0045] Figure 3 illustrates a planar view of the universal clips 102-1 attached to the mounting bracket 110 for supporting the guide rail 108, according to an embodiment of the present disclosure. Figure 4 illustrates an exploded view of the elevator guiding unit 100, according to an embodiment of the present disclosure. Referring to Figure 3 and Figure 4, in the illustrated embodiment, a pair of universal clips, such as the universal clips 102-1, may be employed for supporting the guide rail 108 on the mounting bracket 110. In an embodiment, the pair of universal clips may individually be referred to as the universal clip 102-1' and the universal clip 102-1".

[0046] Referring to Figure 3 and Figure 4, the universal clip 102-1' may be positioned at a first side 304 of the base plate, such as a base plate 108-1, of the guide plate 108. Similarly, the universal clip 102-1" may be positioned at a second side 306 of the base plate 108-1 of the guide plate 108. One of the mounting holes of each of the universal clips 102-1' and 102-1" may be selected for fastening based on the geometrical parameter of the guide rail 108 to be supported on the mounting bracket 110.

[0047] Figures 5a-5d illustrate planar views of the elevator guiding unit 100 depicting the plurality of discrete positions of the universal clips 102-1', 102-1" to mount the guide rails 108 with different geometrical parameters, according to an embodiment of the present disclosure.

[0048] Referring to Figure 5a, in the exemplary embodiment, the universal clips 102-1', 102-1" may be fastened to the mounting bracket 110 in a manner that the guide rail 108, such as T70, having a width 'A' may be supported on the mounting bracket 110. One of the mounting holes, such as the mounting hole 204-3, of the universal clip 102-1' may be selected to fasten the universal clip 102-1' on the mounting bracket 110 and to support the guide rail 108 having the width 'A'. Further, one of the mounting holes, such as the mounting hole 204-3, of the universal clip 102-1" may be selected to fasten the universal clip 102-1" on the mounting bracket 110 and to support the guide rail 108 having the width 'A'. A distance 'd1' may be defined between mounting location, i.e., the mounting holes 204-3, of the universal clip 102-1' and the universal clip 102-1". The distance 'd1' may enable the universal clips 102-1', 102-1" to firmly hold the guide rail having the width 'A' on the mounting

bracket 110.

[0049] Referring to Figure 5b, in the exemplary embodiment, the universal clips 102-1', 102-1" may be fastened to the mounting bracket 110 in a manner that the guide rail 108, such as T82, having a width 'B' may be supported on the mounting bracket. One of the mounting holes, such as the mounting hole 204-4, of the universal clip 102-1' may be selected to fasten the universal clip 102-1' on the mounting bracket 110 and to support the guide rail 108 having the width 'B'. Further, one of the mounting holes, such as the mounting hole 204-4, of the universal clip 102-1" may be selected to fasten the universal clip 102-1" on the mounting bracket 110 and to support the guide rail having the width 'B'. A distance 'd2' may be defined between mounting location, i.e., the mounting holes 204-4, of the universal clip 102-1' and the universal clip 102-1". The distance 'd2' may enable the universal clips 102-1', 102-1" to firmly hold the guide rail having the width 'B' on the mounting bracket 110.

[0050] Referring to Figure 5c, in the exemplary embodiment, the universal clips 102-1', 102-1" may be fastened to the mounting bracket 110 in a manner that the guide rail 108, such as T89, having a width 'C' may be supported on the mounting bracket 110. One of the mounting holes, such as the mounting hole 204-1, of the universal clip 102-1' may be selected to fasten the universal clip 102-1' on the mounting bracket 110 and to support the guide rail 108 having the width 'C'. Further, one of the mounting holes, such as the mounting hole 204-1, of the universal clip 102-1" may be selected to fasten the universal clip 102-1" on the mounting bracket 110 and to support the guide rail 108 having the width 'C'. A distance 'd3' may be defined between mounting location, i.e., the mounting holes 204-1, of the universal clip 102-1' and the universal clip 102-1". The distance 'd3' may enable the universal clips 102-1', 102-1" to firmly hold the guide rail 108 having the width 'C' on the mounting bracket 110.

[0051] Referring to Figure 5d, in the exemplary embodiment, the universal clips 102-1', 102-1" may be fastened to the mounting bracket 110 in a manner that the guide rail 108, such as T127, having a width 'D' may be supported on the mounting bracket 110. One of the mounting holes, such as the mounting hole 204-2, of the universal clip 102-1' may be selected to fasten the universal clip 102-1' on the mounting bracket 110 and to support the guide rail 108 having the width 'D'. Further, one of the mounting holes, such as the mounting hole 204-2, of the universal clip 102-1" may be selected to fasten the universal clip 102-1" on the mounting bracket 110 and to support the guide rail 108 having the width 'D'. A distance 'd4' may be defined between mounting location, i.e., the mounting holes 204-1, of the universal clip 102-1' and the universal clip 102-1". The distance 'd4' may enable the universal clips 102-1', 102-1" to firmly hold the guide rail 108 having the width 'D' on the mounting bracket 110.

[0052] Figure 6 illustrates an isometric view of a universal clip 102-2, according to another embodiment of

the present disclosure. For the sake of brevity, details of the present disclosure that are explained in the description of Figures 1-5d are not explained in the description of Figures 6-9d.

[0053] Referring to Figure 6, in the illustrated embodiment, the universal clip 102, such as the universal clip 102-2, may include the body 202, such as a body 202-2, adapted to support the guide rail 108 on the mounting bracket 110. In an embodiment, the body 202-2 may be formed of steel, without departing from the scope of the present disclosure.

[0054] The body 202-2 may include, but is not limited to, a plurality of protrusions 602 and a mounting hole 604. The plurality of protrusions 602 may extend from sides of the body 202-2. In the illustrated embodiment, the plurality of protrusions 602 may individually be referred to as the protrusion 602-1, the protrusion 602-2, the protrusion 602-3, and the protrusion 602-4.

[0055] Each of the plurality of protruded portions 602 may include a first inclined portion 606 and a second inclined portion 608. The first inclined portion 606 may extend from one side of the body 202-2. The second inclined portion 608 may extend from the first inclined portion 606. The second inclined portion 608 may include a clamping end 610 adapted to clamp the guide rail 108 on the mounting bracket 110.

[0056] The mounting hole 604 may enable fastening of the body 202-2 with the mounting bracket 110 in the plurality of discrete positions. The mounting hole 604 may be adapted to receive the fastening member 302 to fasten the body 202-2 with the mounting bracket 110. In an embodiment, the mounting hole 604 may be aligned with the receiving hole of the mounting bracket 110 and subsequently, the fastening member 302 may be inserted through the mounting hole 602 and the receiving hole. The fastening member 302, such as a bolt, may be secured with the body 202-2 and the mounting bracket 110 via a nut 612 and a washer 614, without departing from the scope of the present disclosure.

[0057] In one embodiment, referring to Figure 6, the mounting hole 604 may be eccentrically formed with respect to a central axis C-C' of the body 202-2. In such an embodiment, the mounting hole 604 may be formed in proximity to at least one of the plurality of protrusions 602. For example, referring to Figure 6, the mounting hole 604 may be formed in proximity to the protrusions 602-2, 602-3 of the body 202-2. Further, in such an embodiment, the plurality of protrusions 602 may have similar shapes and sizes compared to each other.

[0058] In another embodiment, the mounting hole 604 may be centrally formed with respect to a central axis C-C' of the body 202-2. In such an embodiment, the mounting hole 604 may be formed at an equal distance from each of the plurality of protrusions 602. Further, in such an embodiment, the plurality of protrusions 602 may have distinct shapes and sizes compared to each other. The distinct shape and size of the plurality of protrusions 602 may enable the universal clip 102-2 to hold the guide

rails 108 having different geometrical parameters.

[0059] In an embodiment, the body 202-2 may be adapted to be rotated, in one of the plurality of discrete positions, about the central axis C-C' to engage one of the plurality of protrusions 602 with the guide rails 108 based on the at least one geometrical parameter of the guide rail 108. In one embodiment, wherein the mounting hole 604 is eccentrically formed, the body 202-2 may be rotated in one of the plurality of discrete positions to align the mounting hole 604 with the receiving hole of the mounting bracket based on the at least one geometrical parameter of the guide rail 108.

[0060] In another embodiment, wherein the mounting hole 604 is centrally formed, the body 202-2 may be rotated in one of the plurality of discrete positions to clamp the guide rail 108 via one of the plurality of protrusions 602 based on the at least one geometrical parameter of the guide rail 108. As mentioned earlier, each of the plurality of protrusions 602 may have a discrete shape and size. One of the plurality of protrusions 602 may be selected based on the geometrical parameter of the guide rail 108 and subsequently, the body 202-2 may be rotated to clamp the guide rail 108 with the selected protrusion of the body 202-2.

[0061] Figure 7 illustrates a planar view of the universal clip 102-2 attached to the mounting bracket 110 for supporting the guide rail 108, according to an embodiment of the present disclosure. Figure 8 illustrates an exploded view of the elevator guiding unit 100, according to an embodiment of the present disclosure.

[0062] Referring to Figure 7 and Figure 8, in the illustrated embodiment, a pair of universal clips, such as the universal clips 102-2, may be employed for supporting the guide rail 108 on the mounting bracket 110. In an embodiment, the pair of universal clips may individually be referred to as the universal clip 102-2' and the universal clip 102-2". The universal clip 102-2' may be positioned at the first side 304 of the base plate 108-1, of the guide plate 108. Similarly, the universal clip 102-2" may be positioned at the second side 306 of the base plate 108-1 of the guide plate 108. In the illustrated embodiment, each of the universal clips 102-2', 102-2" may be rotated in one of the plurality of discrete positions based on the geometrical parameter of the guide rail 108 to be supported on the mounting bracket 110.

[0063] Figures 9a-9d illustrate planar views of the elevator guiding unit 100 depicting the plurality of discrete positions of the universal clip 102-2 to mount the guide rails 108 with different geometrical parameters, according to an embodiment of the present disclosure.

[0064] Referring to Figure 9a, in the exemplary embodiment, the universal clips 102-2', 102-2" may be fastened to the mounting bracket 110 in a manner that the guide rail 108, such as T70, having a width 'A' may be supported on the mounting bracket 110. Each of the universal clips 102-2', 102-2" may be rotated, in one of the discrete positions, to clamp the guide rail 108 from sides 302, 304 via the protrusion, such as the protrusion 602-2.

A distance 'd1' may be defined between a mounting location, i.e., the mounting hole 604, of the universal clip 102-2' and the universal clip 102-2". The distance 'd1' may enable the universal clips 102-2', 102-2" to firmly hold the guide rail 108 having the width 'A' on the mounting bracket 110.

[0065] Referring to Figure 9b, in the exemplary embodiment, the universal clips 102-2', 102-2" may be fastened to the mounting bracket 110 in a manner that the guide rail 108, such as T82, having a width 'B' may be supported on the mounting bracket 110. Each of the universal clips 102-2', 102-2" may be rotated, in one of the discrete positions, to clamp the guide rail 108 from sides 302, 304 via the protrusion, such as the protrusion 602-1. A distance 'd2' may be defined between a mounting location, i.e., the mounting hole 604, of the universal clip 102-2' and the universal clip 102-2". The distance 'd2' may enable the universal clips 102-2', 102-2" to firmly hold the guide rail 108 having the width 'B' on the mounting bracket 110.

[0066] Referring to Figure 9c, in the exemplary embodiment, the universal clips 102-2', 102-2" may be fastened to the mounting bracket 110 in a manner that the guide rail 108, such as T89, having a width 'C' may be supported on the mounting bracket 110. Each of the universal clips 102-2', 102-2" may be rotated, in one of the discrete positions, to clamp the guide rail 108 from sides 302, 304 via the protrusion, such as the protrusion 602-3. A distance 'd3' may be defined between a mounting location, i.e., the mounting hole 604, of the universal clip 102-2' and the universal clip 102-2". The distance 'd3' may enable the universal clips 102-2', 102-2" to firmly hold the guide rail 108 having the width 'C' on the mounting bracket 110.

[0067] Referring to Figure 9d, in the exemplary embodiment, the universal clips 102-2', 102-2" may be fastened to the mounting bracket 110 in a manner that the guide rail 108, such as T127, having a width 'D' may be supported on the mounting bracket 110. Each of the universal clips 102-2', 102-2" may be rotated, in one of the discrete positions, to clamp the guide rail 108 from sides 302, 304 via the protrusion, such as the protrusion 602-4. A distance 'd4' may be defined between a mounting location, i.e., the mounting hole 604, of the universal clip 102-2' and the universal clip 102-2". The distance 'd4' may enable the universal clips 102-2', 102-2" to firmly hold the guide rail 108 having the width 'D' on the mounting bracket 110.

[0068] While specific language has been used to describe the present subject matter, any limitations arising on account thereto, are not intended. As would be apparent to a person in the art, various working modifications may be made to the method in order to implement the inventive concept as taught herein. The drawings and the foregoing description give examples of embodiments. Those skilled in the art will appreciate that one or more of the described elements may well be combined into a single functional element. Alternatively, certain el-

ements may be split into multiple functional elements. Elements from one embodiment may be added to another embodiment.

Claims

1. A universal clip (102-1, 102-2) for mounting guide rails of an elevator, the universal clip (102-1, 102-2) comprising:

a body (202-1, 202-2) adapted to support a guide rail (108) on a mounting bracket (110) and comprising at least one mounting hole (204, 604) to enable fastening with the mounting bracket (110), wherein the body (202-1, 202-2) is adapted to be aligned with respect to the guide rail (108) in one of a plurality of discrete positions, each of the plurality of discrete positions is based on at least one geometrical parameter of the guide rail (108).

2. The universal clip (102-1, 102-2) according to claim 1, wherein the at least one geometrical parameter comprises at least one of a size of the guide rail (108) and a profile of the guide rail (108).

3. The universal clip (102-1) according to claim 1, wherein the body (202-1) comprises a protruded portion (206) extending from one side (203) of the body (202-1) and adapted to be engaged with the guide rail (108) to hold the guide rail (108) on the mounting bracket (110).

4. The universal clip (102-1) according to claim 3, wherein the protruded portion (206) comprises:

a first inclined portion (206-1) extending from one side (203) of the body (202-1); and a second inclined portion (206-2) extending from the first inclined portion (206-1), wherein the second inclined portion (206-2) comprises a clamping end (208) adapted to clamp the guide rail (108) on the mounting bracket (110).

5. The universal clip (102-1) according to claim 3, wherein the body (202-1) comprises a plurality of mounting holes (204) to enable fastening in the plurality of discrete positions with respect to the guide rail (108).

6. The universal clip (102-1) according to claim 5, wherein the body (202-1) is adapted to be fastened to the mounting bracket (110) through one of the plurality of mounting holes (204) to align in a discrete position, from among the plurality of discrete positions, with respect to the guide rail (108) based on

the at least one geometrical parameter of the guide rail (108).

7. The universal clip (102-1) according to any of claims 5 or 6, wherein each of the plurality of mounting holes (204) is adapted to receive a fastening member (302) to fasten the body (202-1) with the mounting bracket (110).

8. The universal clip (102-2) according to claim 1, wherein the body (202-2) comprises:

a plurality of protrusions (602) extending from sides of the body (202-2); and a mounting hole (604) enables fastening of the body (202-2) with the mounting bracket (110) in the plurality of discrete positions.

9. The universal clip (102-2) according to claim 8, wherein the mounting hole (604) is eccentrically formed with respect to a central axis (C-C') of the body (202-2).

10. The universal clip (102-2) according to claim 9, wherein the mounting hole (604) is formed in proximity to at least one of the plurality of protrusions (602).

11. The universal clip (102-2) according to any of claims 8, 9 or 10, wherein each of the plurality of protruded portions (602) comprises:

a first inclined portion (606) extending from one side of the body (202-2); and a second inclined portion (608) extending from the first inclined portion (606), wherein the second inclined portion (608) comprises a clamping end (610) adapted to clamp the guide rail (108) on the mounting bracket (110).

12. The universal clip (102-2) according to any of claims 8 to 11, wherein the mounting hole (604) is adapted to receive a fastening member (302) to fasten the body (202-2) with the mounting bracket (110).

13. The universal clip (102-2) according to any of claims 8-12, wherein the body (202-2) is adapted to be rotated, in one of the plurality of discrete positions, about a central axis (C-C') to engage one of the plurality of protrusions (602) with the guide rails (108) based on the at least one geometrical parameter of the guide rail (108).

14. The universal clip (102-1, 102-2) according to any of the preceding claims, wherein the body (202-1, 202-2) is formed of steel.

15. An elevator guiding unit (100) including at least one

universal clip (102-1, 102-2) according to any of the preceding claims, the elevator guiding unit (100) comprising:

a guide rail (108) for guiding an elevator car (104) within an elevator shaft (106);
at least one mounting bracket (110) for supporting the guide rail (108); and
the at least one universal clip (102-1, 102-2) mounting the guide rail (108) on the at least one mounting bracket (110).

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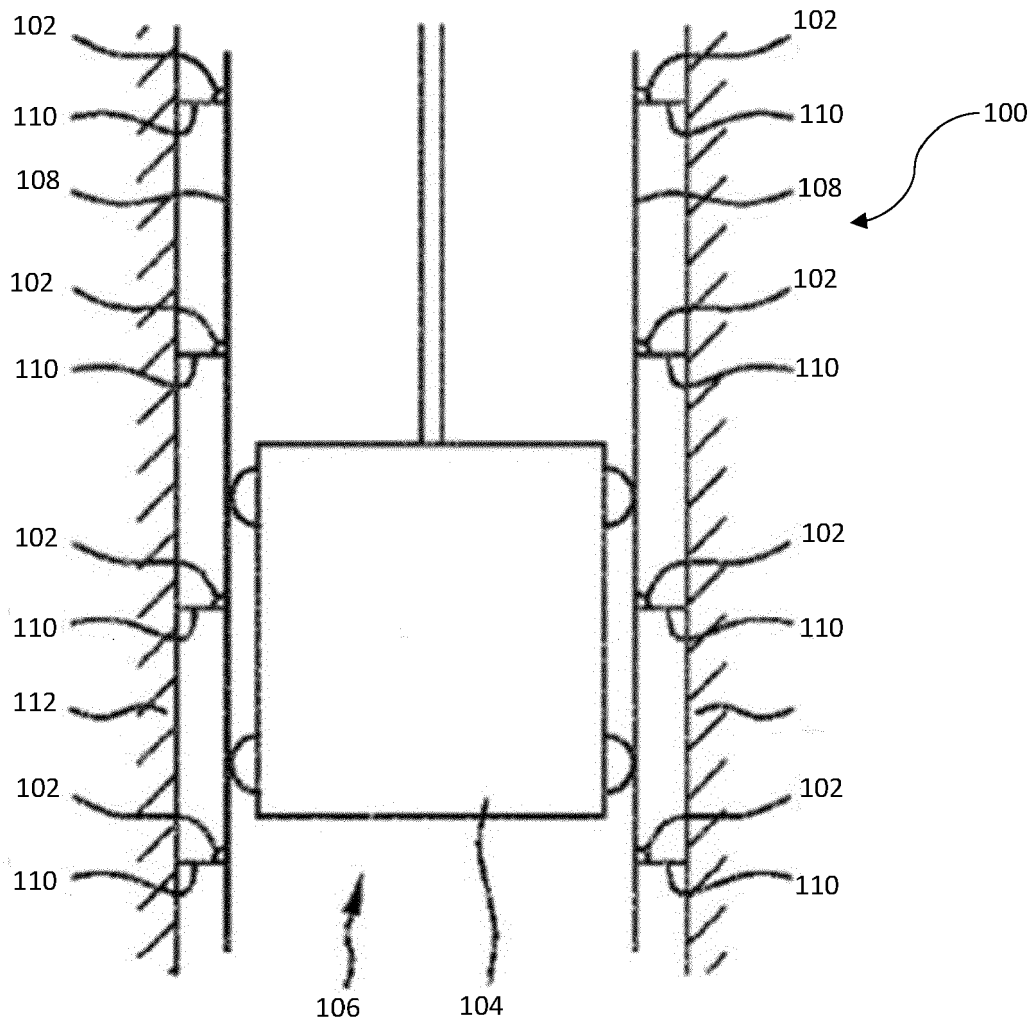


FIGURE 1

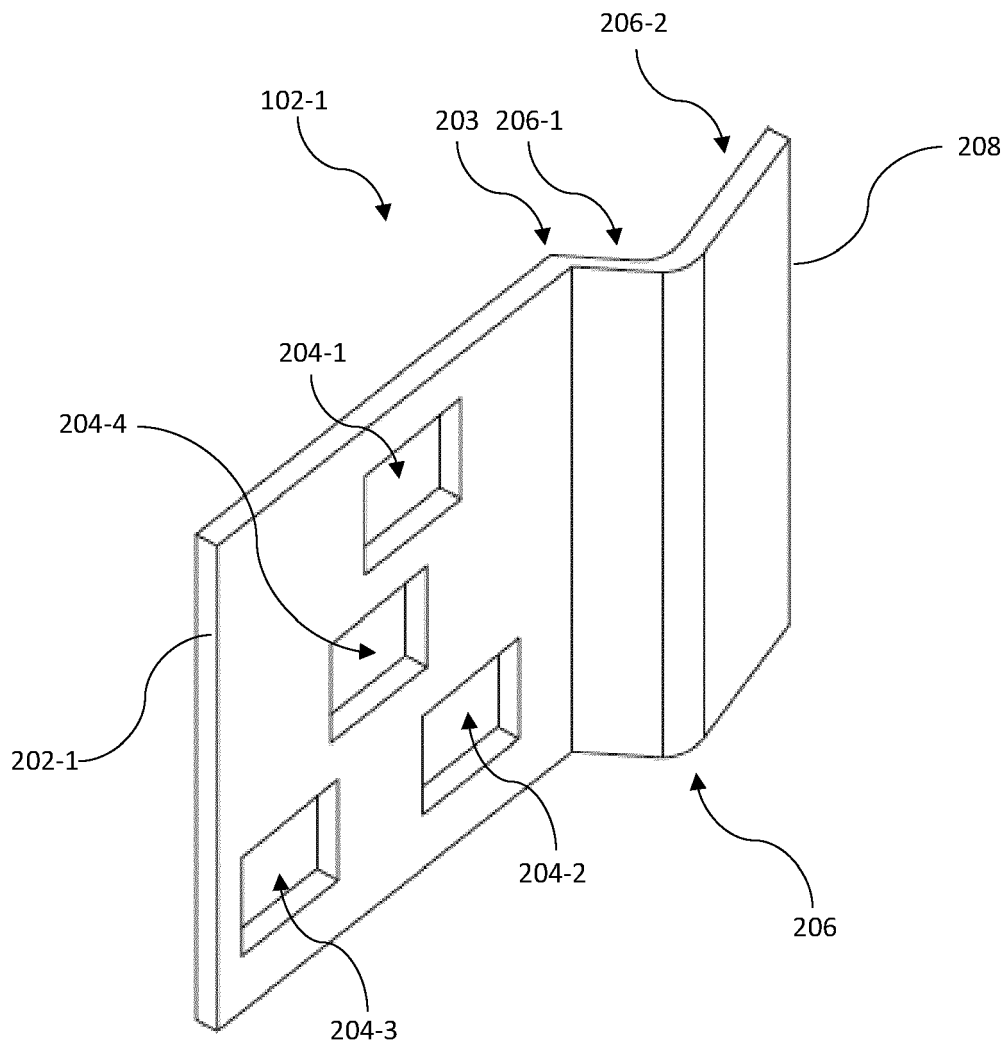


FIGURE 2

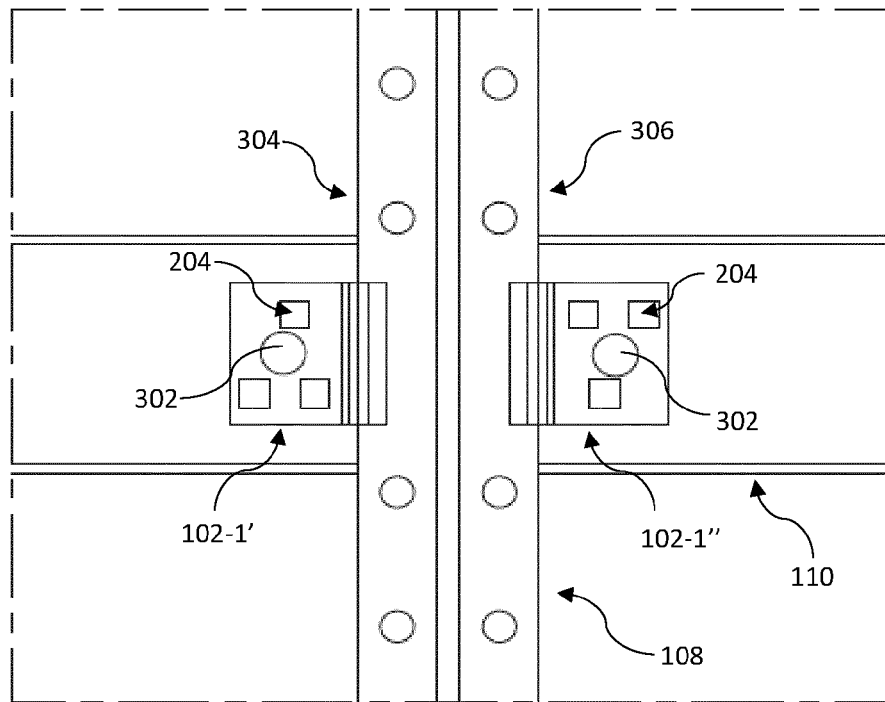


FIGURE 3

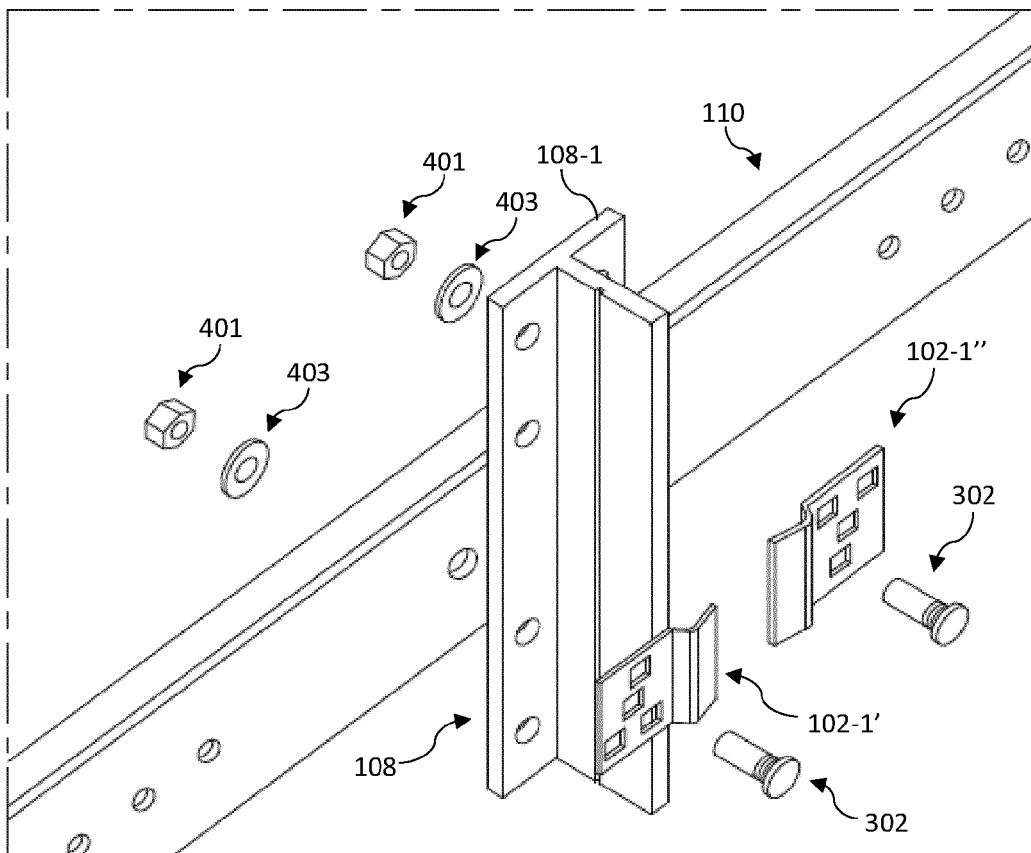
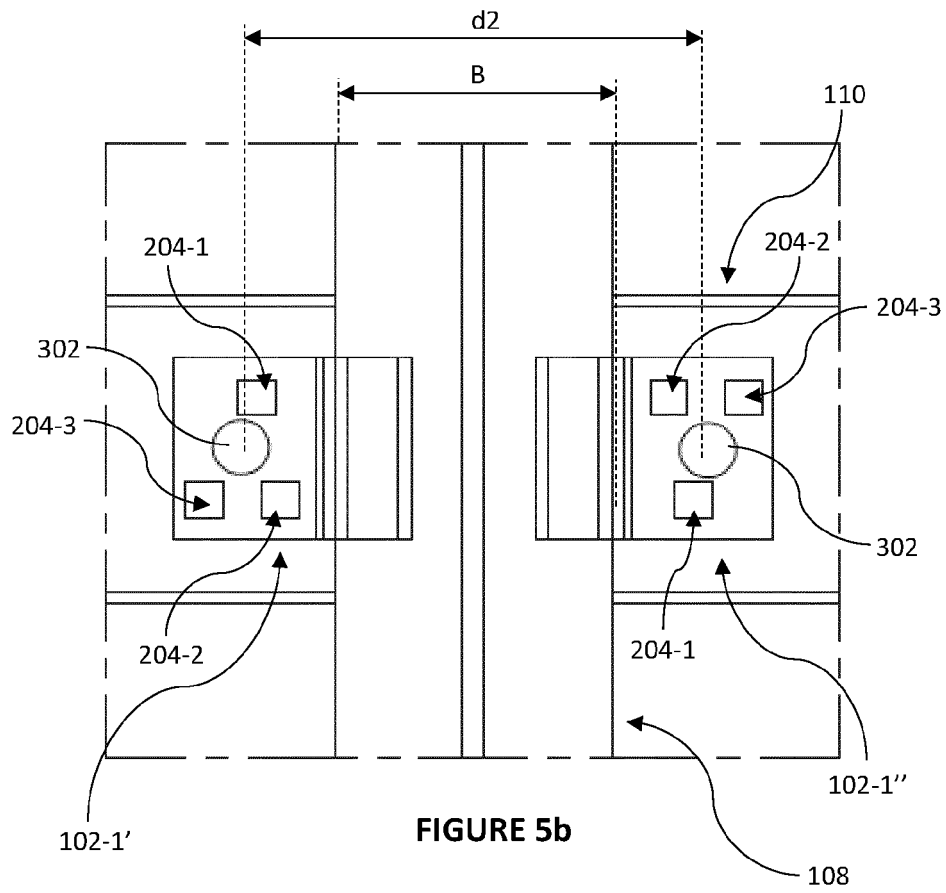
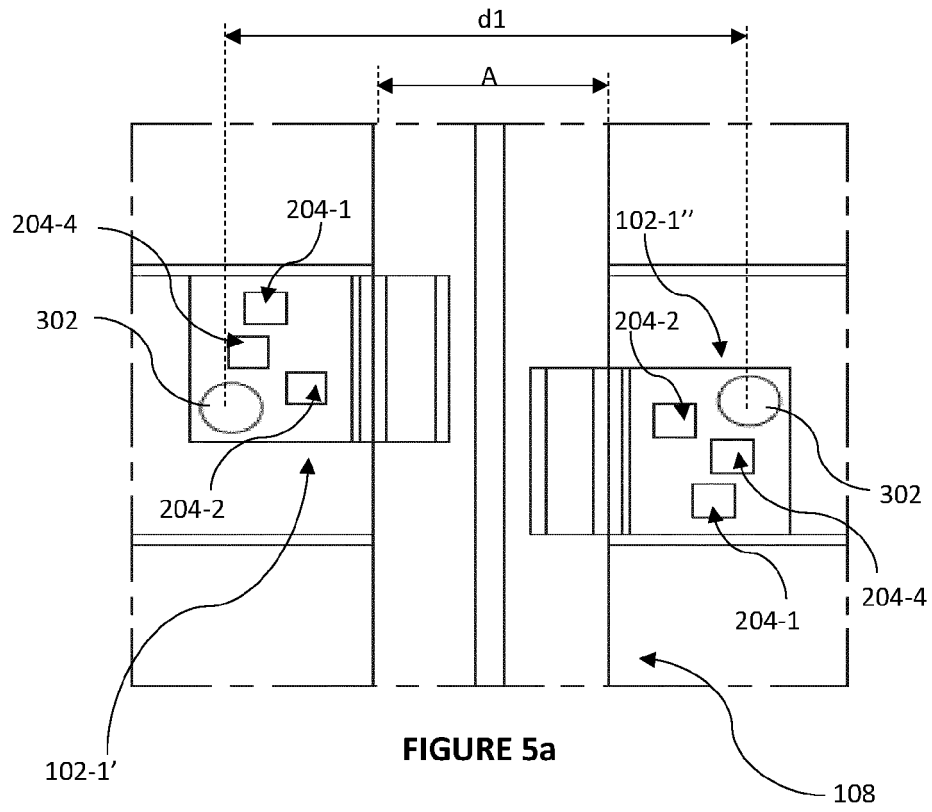
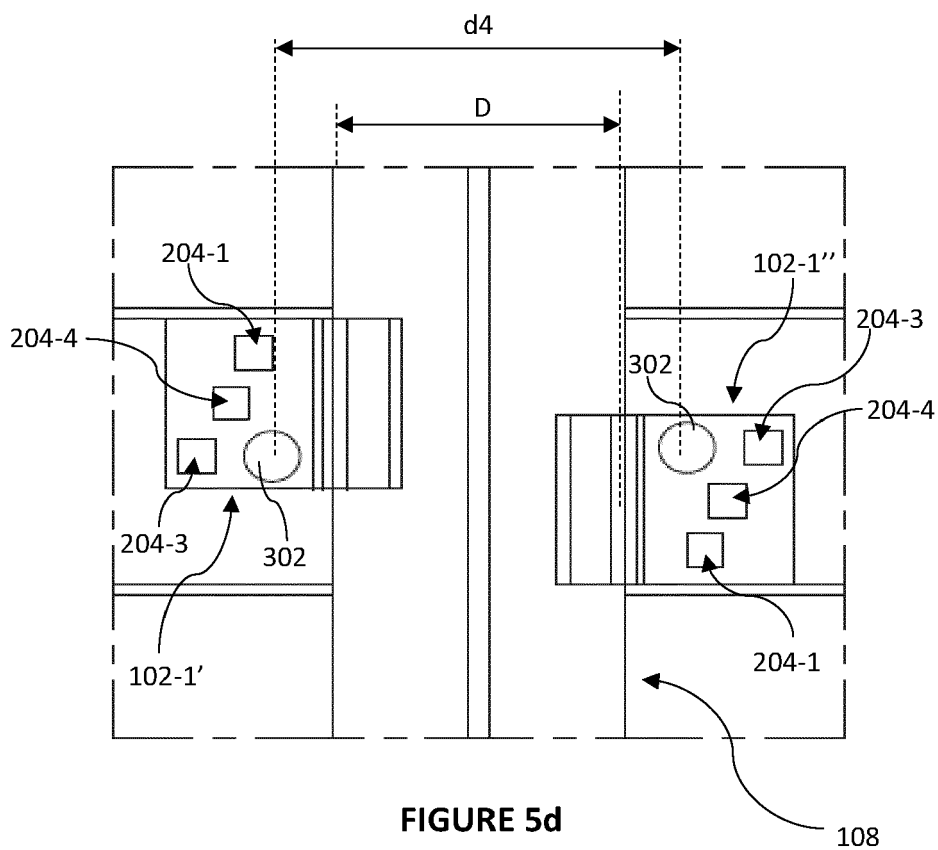
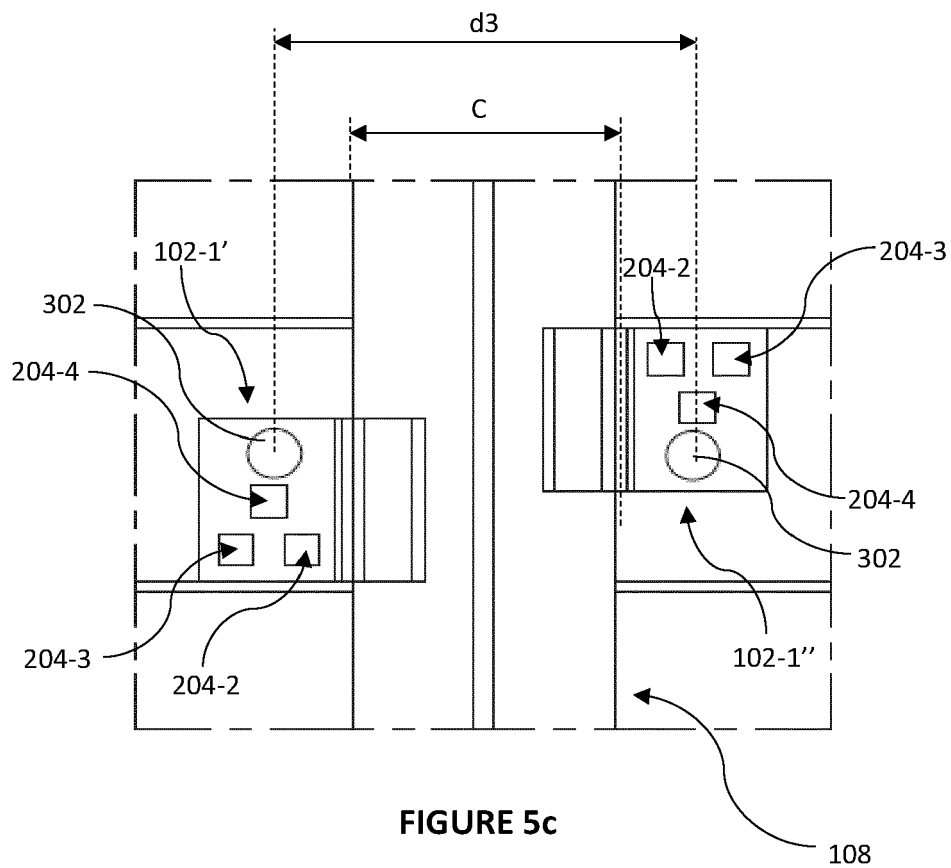


FIGURE 4





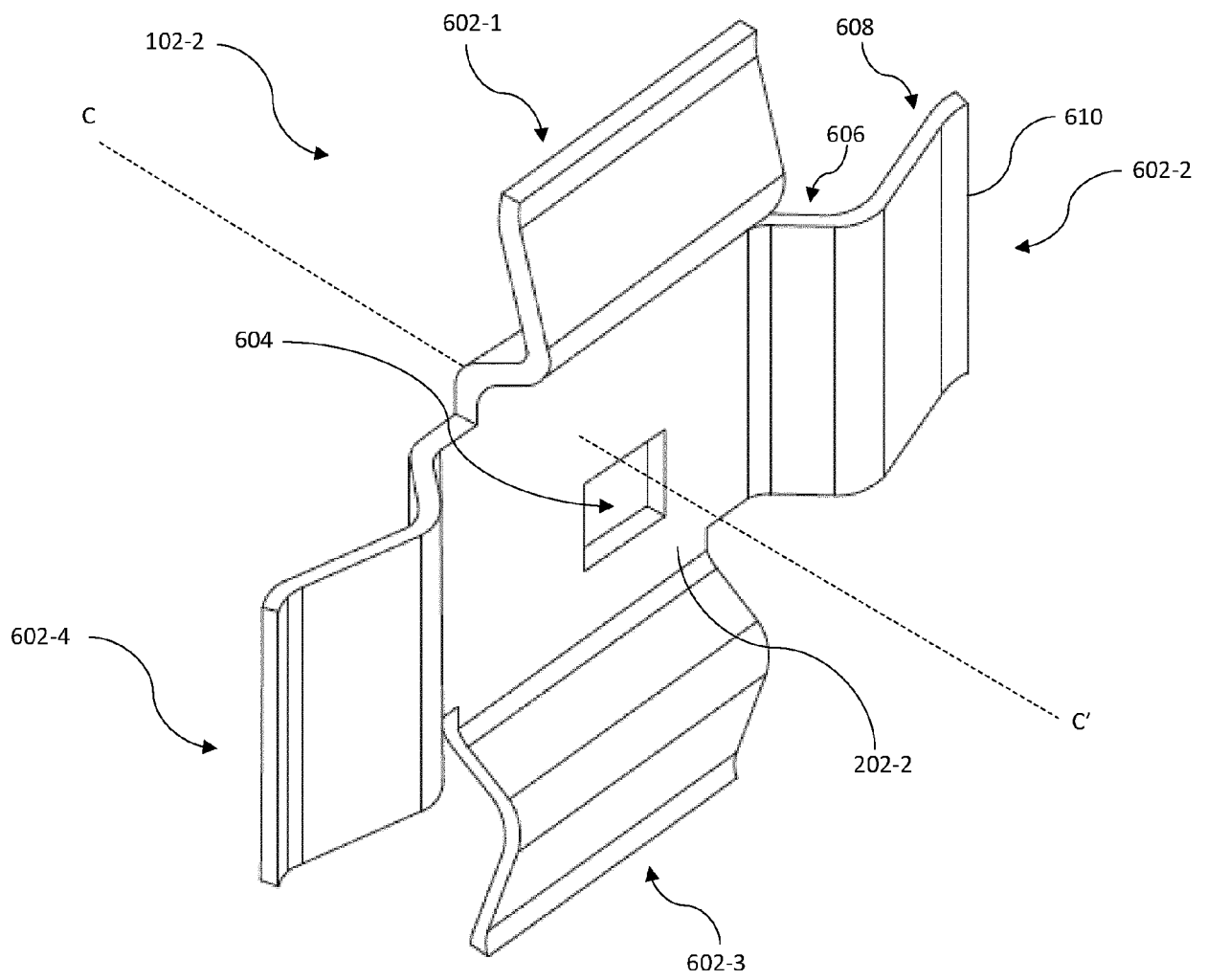


FIGURE 6

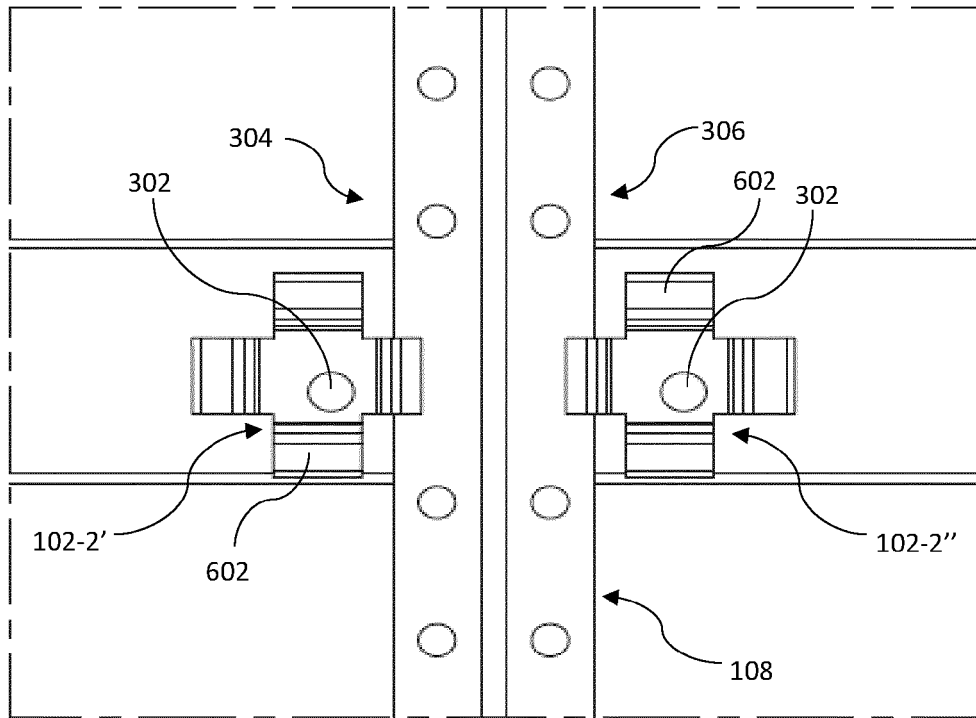


FIGURE 7

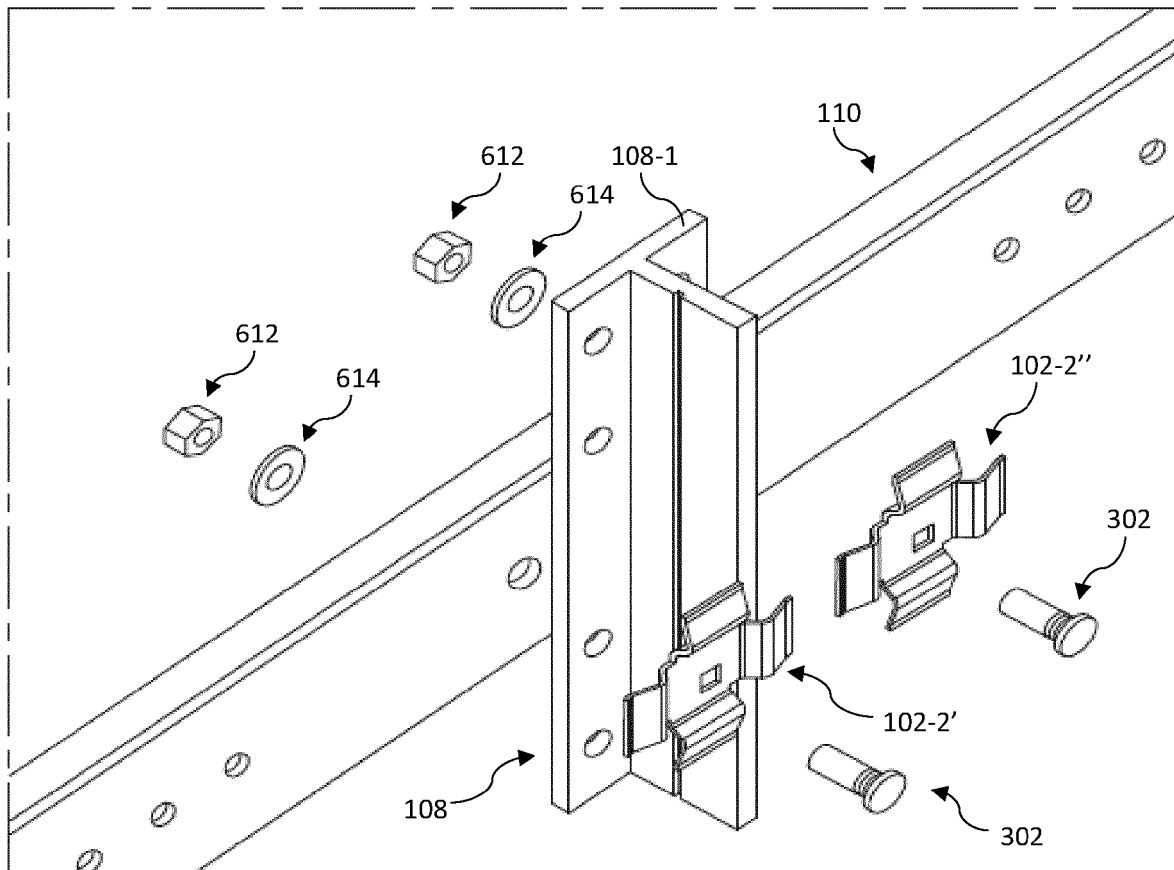
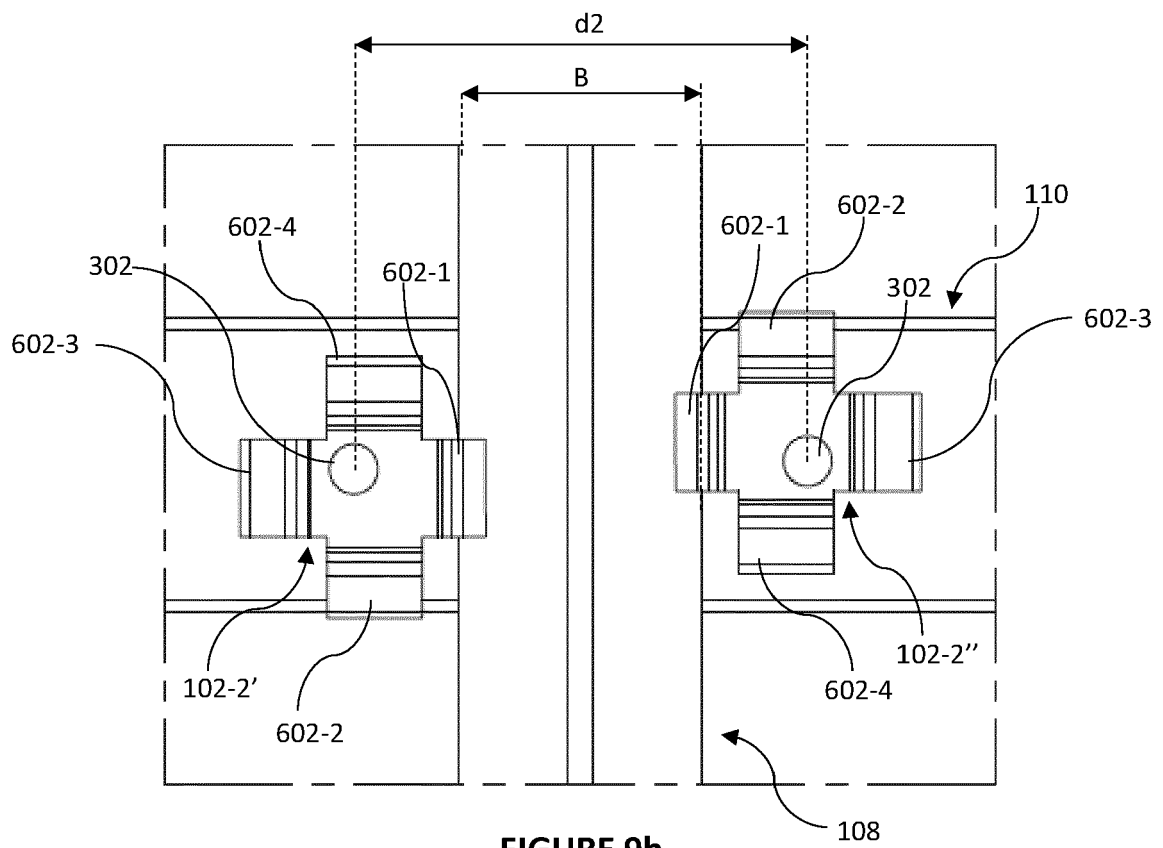
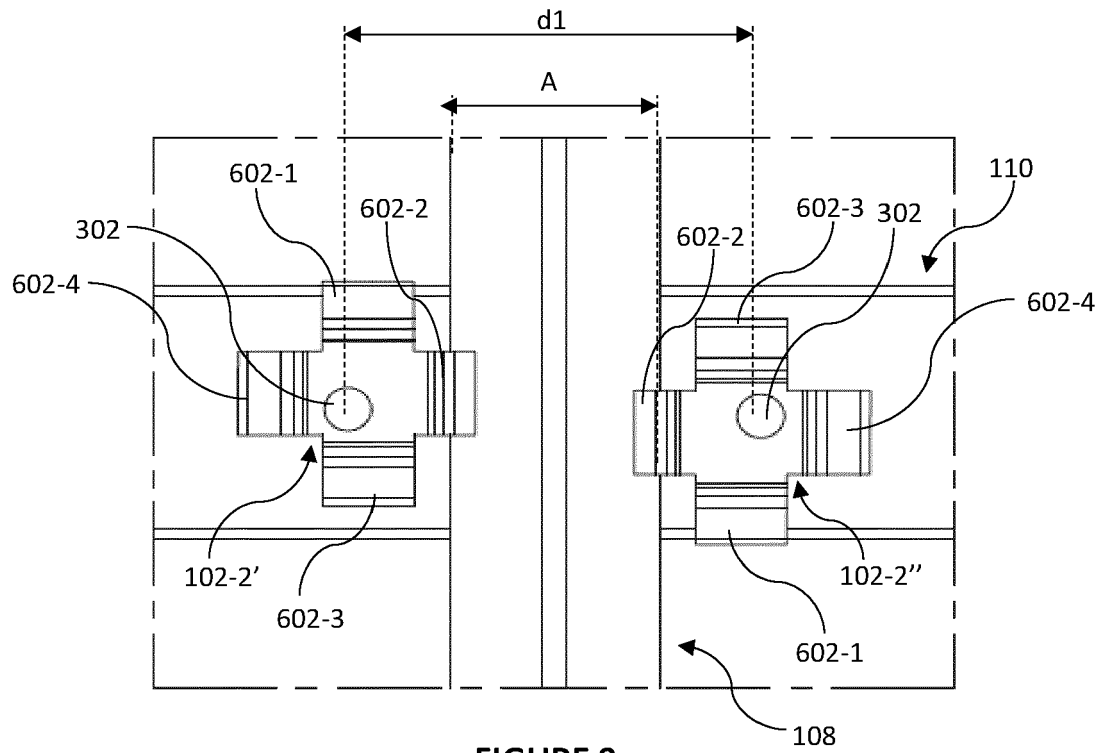
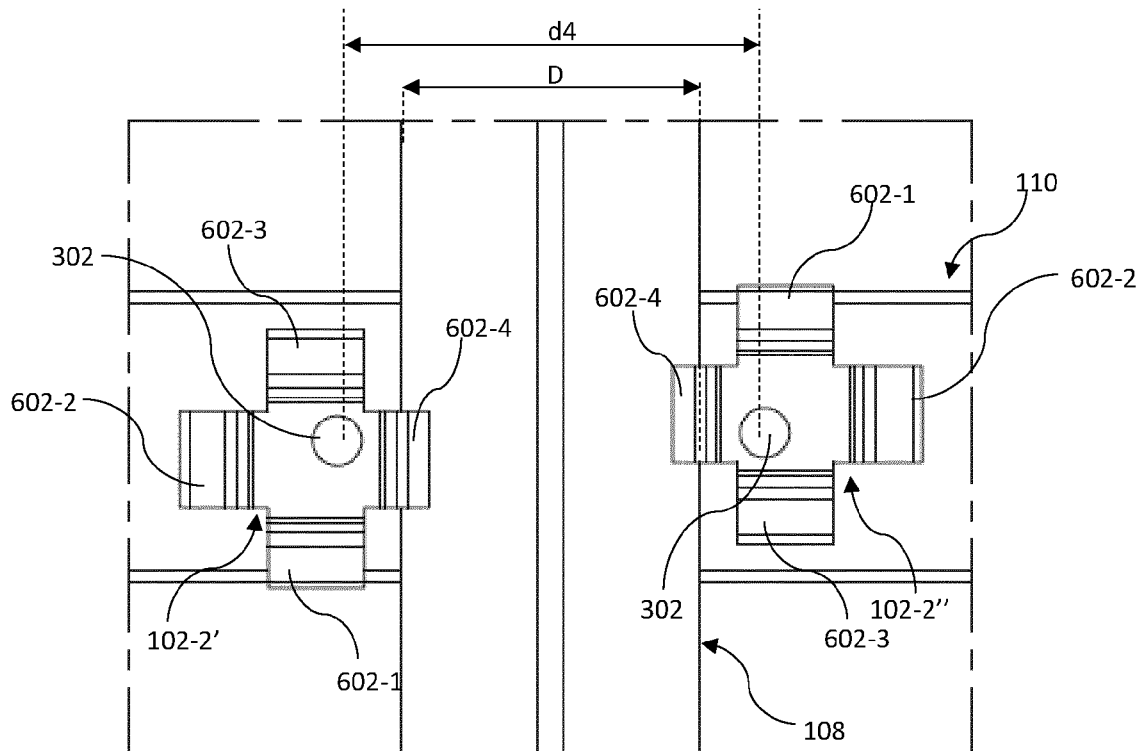
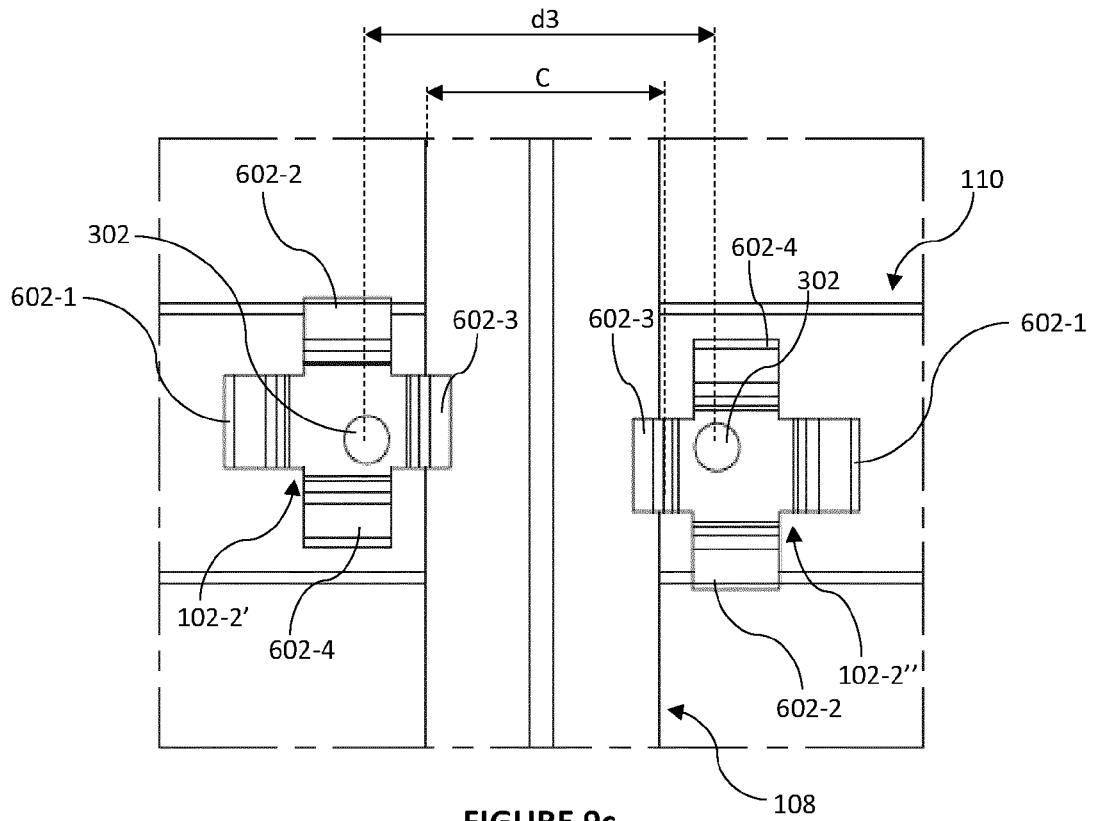


FIGURE 8







EUROPEAN SEARCH REPORT

Application Number

EP 22 20 3579

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			B66B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		14 March 2023	Lenoir, Xavier
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EPO FORM 1503 03/82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 22 20 3579

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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14-03-2023

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