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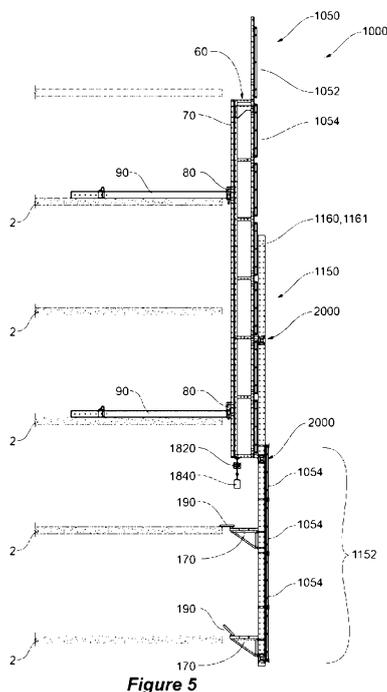
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(54) Title: A PERIMETER SAFETY SCREEN ASSEMBLY



(57) Abstract: The present disclosure relates to a perimeter safety screen assembly for a building. In one aspect, the perimeter safety screen assembly comprises an upper screen assembly, and a hanging screen assembly appending from the upper screen assembly, and extending below the upper screen assembly. In one form, at least one of the upper screen assembly or the hanging screen assembly is adapted so that the hanging screen assembly can be appended to, and removed from the upper screen assembly whilst upper screen assembly is in use on the building.



A PERIMETER SAFETY SCREEN ASSEMBLY

PRIORITY DOCUMENTS

[0001] The present application claims priority from:

Australian Provisional Patent Application No. 2016901878 titled "HANGING SCREEN" and filed on 19 May 2016; and

Australian Provisional Patent Application No. 2016904047 titled "A PERIMETER SAFETY SCREEN ASSEMBLY" and filed on 5 October 2016;

the content of each of which is hereby incorporated by reference in its entirety.

INCORPORATION BY REFERENCE

[0002] The following publication is referred to in the present application and its contents are hereby incorporated by reference in its entirety:

International Patent Application No PCT/AU2003/001112 titled "A LIFTING OR TRANSPORTING MEANS USING A RECIPROCATING JACK" in the name of Formula One Self Driving Screens Pty Ltd.

TECHNICAL FIELD

[0003] The present disclosure relates to a perimeter safety screen assembly for a building.

BACKGROUND

[0004] Perimeter safety screens are generally employed to provide a screen or barrier at an edge of floors of a building which are under construction.

[0005] Desirably, a safety screen extends above the uppermost completed floor to protect workers preparing formwork for a new, higher floor of the building, and extends down to lower floors awaiting final fixing of windows or external walls. A key limitation to screen size however is the fact that these are typically delivered by a semi-trailer and then craned into position. This imposes limitations on the physical size of screens and/or screen sub-assemblies.

[0006] It is against this background and the problems and difficulties associated therewith that the present invention has been developed.

[0007] Certain objects and advantages of the present invention will become apparent from the following description, taken in connection with the accompanying drawings, wherein, by way of illustration and example, an embodiment of the present invention is disclosed.

SUMMARY

[0008] According to a first aspect, there is provided a perimeter safety screen assembly for a building, the perimeter safety screen assembly comprising an upper screen assembly, and a hanging screen assembly appending from the upper screen assembly, and extending below the upper screen assembly.

[0009] In one form, at least one of the upper screen assembly or the hanging screen assembly is adapted so that the hanging screen assembly can be appended to, and removed from the upper screen assembly whilst the upper screen assembly is in use on the building.

[0010] In one form, the upper screen assembly is adapted so that the hanging screen assembly can append therefrom.

[0011] In one form, the hanging screen assembly is adapted to append from the upper screen assembly.

[0012] In one form, the hanging screen assembly depends from the upper screen assembly.

[0013] In one form, the hanging screen assembly extends from the upper screen assembly.

[0014] In one form, the upper screen assembly is a climbing screen assembly. That is to say, it is adapted to be raised with respect to the building, as work on the building progresses.

[0015] In one form, in an alternative, the upper screen assembly is not a climbing screen assembly, but one which must be repositioned by means external to it, such as a crane or a winch system.

[0016] In one form, the upper screen assembly comprises a base for securing the perimeter safety screen assembly with respect to the building, a frame depending from the base, and a screen depending from the frame.

[0017] In one form, the upper screen assembly comprises at least one platform inside of the screen and extending towards the building.

[0018] In one form, the upper screen assembly comprises a plurality of vertically spaced apart platforms.

- [0019] In one form, the hanging screen assembly comprises a frame, and a screen depending from the frame.
- [0020] In one form, each screen is comprised of a plurality of screen panels.
- [0021] In one form, each screen panel comprises a frame and an infill panel.
- [0022] In one form, the or each infill panel comprises a mesh. In an alternative, the infill panel comprises a solid panel.
- [0023] In one form, the hanging screen assembly further comprises at least one platform inside of the screen and extending towards the building.
- [0024] In one form, the hanging screen assembly comprises a plurality of vertically spaced apart platforms.
- [0025] In one form, each of the platforms is either detachable, or movable between extended and retracted positions, to aid craning of the hanging screen assembly.
- [0026] In one form, the hanging screen assembly depends from the upper screen assembly on an outer side (relative to the building) of the screen of the upper screen assembly.
- [0027] In one form, in an alternative, the hanging screen assembly depends from the upper screen assembly on an inner side (relative to the building) of the screen of the upper screen assembly.
- [0028] In one form, in an alternative, the hanging screen assembly depends from a lower edge of the screen of the upper screen assembly.
- [0029] In one form, the screen of the hanging screen assembly forms a continuation of the screen of the upper screen assembly.
- [0030] In one form, the upper screen assembly comprises at least one mount from which the hanging screen assembly can be suspended.
- [0031] In one form, the upper screen assembly comprises a plurality of mounts.
- [0032] In one form, the upper screen assembly comprises a plurality of vertically spaced apart mounts.

[0033] In one form, the or each of the mounts is located on an outer side of the screen of the upper screen assembly.

[0034] In one form, each of these mounts comprises a saddle for nestably receiving a portion of the hanging screen assembly.

[0035] In one form, the or each portion is a crossmember assembly for the hanging screen assembly. In this context, a crossmember assembly is a transverse assembly which adds support to the frame.

[0036] In one form, in an alternative, the or each portion is a crossmember for the hanging screen assembly. In this context, a crossmember is a transverse piece which adds support to the frame.

[0037] In one form, each of the mounts comprises an outwardly extending, upwardly angled (or hook-like) mounting guide for guiding one of the crossmembers into the saddle.

[0038] In one form, the or each of the crossmember assemblies comprises a length adjustment means.

[0039] In one form, the or each crossmember assembly comprises a central portion and a pair of adjustable end portions.

[0040] In one form, each of the end portions is movable between a retracted position and an extended position with respect to the central portion.

[0041] In one form, the screen for each of the upper screen assembly and the hanging screen assembly comprises a plurality of screen panel assemblies.

[0042] In one form, each of the screen panel assemblies comprises a width adjustment means.

[0043] In one form, the or each screen panel assembly comprises a central portion and a pair of adjustable side portions.

[0044] In one form, each of the side portions is movable between a retracted position and an extended position with respect to the central portion.

[0045] In one form, in an alternative, the arrangement of mounts and crossmember assemblies could be reversed on the upper and hanging screen assemblies.

[0046] According to a further aspect, there is provided a hanging screen assembly for a perimeter safety screen assembly for a building, the perimeter safety screen assembly comprising an upper screen

assembly and the hanging screen assembly, where the hanging screen assembly is adapted to append from the upper screen assembly, and extend below the upper screen assembly.

[0047] According to a further aspect, there is provided an upper screen assembly for a perimeter safety screen assembly for a building, the perimeter safety screen assembly comprising the upper screen assembly and a hanging screen assembly, where the upper screen assembly is adapted so that the hanging screen assembly can append therefrom, and extend below the upper screen assembly.

[0048] According to a further aspect, there is provided a perimeter safety screen assembly for a building, the perimeter safety screen assembly comprising a first screen assembly, and a second screen assembly appending from the first screen assembly, wherein at least one of the first screen assembly or the second screen assembly is adapted so that the second screen assembly can be appended to, and removed from the first screen assembly whilst the first screen assembly is in use on the building.

[0049] For ease of description, a perimeter safety screen assembly embodying the present invention is described below in its usual assembled position as shown in the accompanying drawings, and terms such as front, rear, upper, lower, horizontal, longitudinal etc., may be used with reference to this usual position. However, the perimeter safety screen assembly may be manufactured, transported, or sold in orientations other than that described and shown here.

[0050] A detailed description of one or more embodiments of the invention is provided below along with accompanying figures that illustrate by way of example the principles of the invention. While the invention is described in connection with such embodiments, it should be understood that the invention is not limited to any embodiment. On the contrary, the scope of the invention is limited only by the appended claims and the invention encompasses numerous alternatives, modifications and equivalents. For the purpose of example, numerous specific details are set forth in the following description in order to provide a thorough understanding of the present invention.

[0051] The present invention may be practiced according to the claims without some or all of these specific details. For the purpose of clarity, technical material that is known in the technical fields related to the invention has not been described in detail so that the present invention is not unnecessarily obscured.

BRIEF DESCRIPTION OF DRAWINGS

[0052] Embodiments of the present invention will be discussed with reference to the accompanying drawings wherein:

- [0053] Figure 1 is a schematic side view of a perimeter safety screen assembly according to a first embodiment;
- [0054] Figure 2 is schematic side view of a perimeter safety screen assembly according to a second embodiment;
- [0055] Figure 3 is a front view of the perimeter safety screen assembly of Figure 2;
- [0056] Figure 4 is a plan view of the perimeter safety screen assembly of Figure 2;
- [0057] Figure 5 is a schematic side view of a perimeter safety screen assembly according to a third embodiment;
- [0058] Figure 6 is an exploded side view of the perimeter safety screen assembly of Figure 5;
- [0059] Figure 7 is a front view of the perimeter safety screen assembly of Figure 5;
- [0060] Figure 8 is a plan view of the perimeter safety screen assembly of Figure 5, further illustrating a hoisting frame assembly;
- [0061] Figure 9 is a detail view taken at 'Detail 1' in Figure 5;
- [0062] Figure 10 is a front view of the hoisting frame assembly illustrated in Figures 8 and 9;
- [0063] Figure 11 is a plan view of the hoisting frame assembly of Figure 10;
- [0064] Figure 12 is a front view of a central portion of the hoisting frame assembly of Figure 10;
- [0065] Figure 13 is a plan view of the central portion of Figure 12;
- [0066] Figure 14 is a front view of an end portion of the hoisting frame assembly of Figure 10;
- [0067] Figure 15 is a plan view of the end portion of Figure 14; and
- [0068] Figure 16 is a detail view of an end plate from the end portion of Figure 14.
- [0069] In the following description, like reference characters designate like or corresponding parts throughout the figures.

DESCRIPTION OF EMBODIMENTS

[0070] Referring now to Figure 1, there is shown a perimeter safety screen assembly 1 depending from completed floors 2 of a multi-storey building which is under construction.

[0071] The perimeter safety screen assembly 1 comprises an upper screen assembly 50 which, in use, extends around a perimeter of the building and above the uppermost completed floor, primarily to protect workers preparing formwork for a new, higher floor of the building.

[0072] The upper screen assembly 50 comprises a screen 52 comprised of a plurality of screen panels 54, where each screen panel 54 comprises a panel frame and an infill panel (of mesh in this case), and where each screen panel 54 depends from a frame 60. In this embodiment, the frame 60 comprises a space frame structure of generally cuboid shape, and comprising a plurality of spaced apart frame posts 62, which are bridged by a plurality of beams 64 and diagonal bracing struts 66.

[0073] The frame 60 further comprises at least a pair of vertical bracket posts 70. As seen in Figure 3, each bracket post 70 is connected to, but spaced apart from, a frame post 62 by a plurality of joiners 68 that are evenly spaced along the length of the bracket posts 70 and frame posts 62. The joiners 68 are narrower than the bracket post 70. The result is a series of elongate slots formed between the bracket posts 70, frame posts 62 and the joiners 68. The function of these elongate slots will be described further below.

[0074] Each bracket post 70 is carried upon a bracket (also referred to as a shoe) 80 which depends from a horizontal support beam (also referred to as a needle or a base) 90 which in turn is secured with respect to the floor 2 slab.

[0075] Each of the brackets 80 comprise a pair of side plates that each have flanges on their forward edges that partly locate in front of each of the bracket posts 70. One or each of the side plates are either hinged or can be separated to enable the brackets 80 to be secured to a bracket post 70.

[0076] Each of the brackets 80 comprises a latch means that is designed to enable movement of the bracket posts 70 in only one direction with respect to each of the brackets 80. The latch means (not illustrated) comprises a bar which is hinged to the upper edge of one of the side plates. The bar extends across the bracket 80 so that it rests on the upper surface of the opposite side plate. The bar is positioned so that it extends through the elongate apertures formed by the spacing of the bracket 80, screen post 62 and the joiners 68.

[0077] The frame 60 interposes the screen 52 and the bracket posts 70 so that the screen 52 of the upper screen assembly 50 is horizontally spaced apart from an edge of the completed slab 2. In this way, the beams 64 of the frame 60 can provide support for one or more platforms (or walkways) formed by planks bridging these beams 64. In this way, access is provided to the edge of the slab 2 that forms the floor.

[0078] The perimeter safety screen assembly 1 further comprises a hanging screen assembly 150 appending from the upper screen assembly 50, and extending around a perimeter of the building, below the upper screen assembly 50 and down to lower floors awaiting final fixing of windows and/or external walls.

[0079] The hanging screen assembly 150 comprises a frame 60, and a screen 152 comprised of a plurality of screen panels 154.

[0080] In order to accommodate this hanging screen assembly 150, the upper screen assembly 50 comprises a plurality of mounts 100 for the hanging screen 150. Each of these mounts 100 comprises a saddle 102 for nestably receiving a crossmember 160 of the hanging screen 150, and an outwardly extending, mounting guide 104 which is upwardly angled (or hook-like) for guiding one of the crossmembers into the saddle 102.

[0081] In order to accommodate the mounts 100, each of beams 64 of the frame 60 comprises a length of square hollow steel section. Each of the mounts 100 similarly comprises a length of square hollow steel section sized for insertion into one of the beams 64 of the frame 60 from an outside of the screen 52 (relative to the building). Each of the beams 64 and the mounts 100 comprises an array of pin holes for receiving a pin (or bolt) to secure the mount 100 to the beam 64 of the frame 60.

[0082] In use, the hanging screen assembly 150 is craned (using crane lift points) into position, and the mounting guides 104 will guide the hanging screen 150 into its saddles 102 on the mounts 100 as the hanging screen assembly 150 is lowered by the crane. The hanging screen assembly 150 will then partially overlap the upper screen assembly 50 on its outwardly (relative to the building) facing side at the lower end thereof.

[0083] The perimeter safety screen assembly 1 further comprises a means for lifting it with respect to the building. A detailed description of one embodiment of this means can be found in PCT/AU2003/001112, and is incorporated herein by way of reference at least. It should be understood however, that alternative lifting mechanisms may be employed, or that the external lifting means such as a crane or winch may be employed..

[0084] In one embodiment, the lifting means comprises two hydraulic cylinders (although these cylinders may be substituted with a power screw or mechanical jack), where each hydraulic cylinder extends from a beam 90 mounted bracket 80 at a lower end thereof, to a further bracket 80, which is not beam 90 mounted, at an upper end thereof. Although two hydraulic cylinders are described, three or more hydraulic cylinders could also be used. In the case of two or more hydraulic cylinders, the important requirement is to achieve a reasonably equal rate of expansion of each cylinder. This is easily achieved by a person skilled in hydraulics. In addition, systems may be provided where a single hydraulic cylinder is used. In this case, additional support beams 90 may be spaced laterally of the hydraulic cylinder either at the same level as the hydraulic cylinder or above or below it.

[0085] In operation, as the hydraulic cylinder is expanding, the latch means on the bracket 80 on the upper end of the hydraulic cylinder will abut against the joiner and therefore lift the bracket post 70. Upward movement of the frame will not be prevented by the remaining brackets 80. The bar will hinge upwardly to allow the joiners to pass as required.

[0086] In use, when the bracket post 70 is moving upwardly, a joiner will eventually abut against the underneath surface of the latch bar. Continued upward movement of the bracket post 70 will result in the bar hinging upwardly and allowing the joiner to pass whereupon the bar will again hinge downwardly to rest on the upper surface of the adjacent side plate. The bar will prevent downward movement of the bracket post 70 when the joiner abuts against the upper surface of the bar.

[0087] At the maximum extent of expansion of the hydraulic cylinder, the joiners 68 are spaced such that a joiner 68 will have just have passed the latch means on the bracket 80 of the lower end of the hydraulic cylinder and the remaining brackets. Accordingly, contraction of the hydraulic cylinder will result in the bracket post 70 being held as the joiners abut against the upper surface of the bar on the bracket 80 on the lower end of the hydraulic cylinder. The latch means on the bracket 80 on the upper end of the hydraulic cylinder will operate to allow the bracket 80 to move downwardly with respect to the bracket post 70 until it reaches its lowermost position. Again, this may be designed so that it is conveniently placed in relation to a joiner so that upon commencement of the expansion of the hydraulic cylinder, the bar on the bracket 80 on the upper end of the hydraulic cylinder will again engage a joiner to resume lifting the bracket post 70.

[0088] In this way, the bracket post 70 is conveniently lifted in relation to the support beams 90. Obviously, a relatively short stroke hydraulic cylinder can be effectively used to lift the frame.

[0089] Once the lower edge of the screen reaches its uppermost position in relation to the support beam 90, then it is a simple process to re-position the hydraulic cylinder to an upper level. As seen in Figure 2, the hydraulic cylinder can be disconnected from the bracket 80 of its lower end. The upper bracket 80 is

disconnected from the bracket post 70. The lower bracket 80 continues to support the frame while the hydraulic cylinder is disconnected.

[0090] In order to provide additional support further beams 90 and brackets 80 may be secured at floors above or below the location of the hydraulic cylinder.

[0091] In use, the hanging screen assembly 150 will hang from and below the upper screen assembly 50, and provide protection while workers complete the façade (amongst other things) of the building on lower floor levels. As the upper screen assembly 50 is raised, the hanging screen 150 hanging therefrom will be raised with it.

[0092] The hanging screen assembly 150 may further comprise one or more platforms or walkways 170 which extend from the frame 152 towards the building so as to substantially bridge the gap between these.

[0093] To facilitate the walkways 170, the hanging screen assembly 150 comprises a plurality of walkway mounts 180. Each walkway mount 180 comprises a bracket secured with respect to the frame 152 of the hanging screen assembly 150, where each bracket comprises a socket for receiving an end of a walkway supporting beam 174 in a cantilever fashion. An array of bolt holes extends along each walkway supporting beam 174, and in use, bolts can be passed through these holes to releasably secure the walkway supporting beam 174 with respect to the mounts 180.

[0094] The mounts 180 are arranged in groups (which extend laterally across the hanging screen assembly 150), with each group spaced apart lengthwise along the frame 152 of the hanging screen assembly 150. In this way, the walkways 170 can be positioned to match the floor levels of the building.

[0095] Additional stability for the walkways 170 can be provided by diagonal braces. One example of a diagonal brace 176 extends between the frame 152 of the hanging screen assembly 150 and the walkway supporting beams 174, and a further example of a diagonal brace 178 extends between the walkway supporting beams 174 of vertically adjacent walkways 170.

[0096] If necessary, the walkways 170 can be removed, or pivoted between open and closed positions, and the space which exists between the screen 152 and the edge of the floors 2 can be used to pass objects between floors 2. In one example, a small crane can be employed to lower objects such as windows or cladding panels from an upper floor into an intended position on the side of the building, but inside of screen 152, with the crane supporting the weight of the window or cladding panel while this is positioned and secured in place.

[0097] Referring now to Figures 2 through 4, where there is illustrated a perimeter safety screen assembly 1a according to a further embodiment. Those parts of the perimeter safety screen assembly 1a which are identical (or near- identical) to corresponding parts shown in the perimeter safety screen assembly 1 of Figure 1, will be denoted by the same reference numerals and will not be described again in detail.

[0098] In perimeter safety screen assembly 1a, the outermost frame posts 62 of the frame 60 for the screen 52 of the upper screen assembly 50 extend higher than the innermost frame posts 62, so that the screen 52 may extend higher, thereby increasing the amount of protection provided for workers at the very top of the building.

[0099] Referring now to Figures 5 through 9, where there is illustrated a perimeter safety screen assembly 1000 according to a further embodiment. Those parts of the perimeter safety screen assembly 1000 which are identical (or near- identical) to corresponding parts shown in the perimeter safety screen assembly 1 of Figure 1, will be denoted by the same reference numerals and will not be described again in detail.

[00100] The perimeter safety screen assembly 1000 comprises an upper screen assembly 1050, which comprises a screen 1052 comprised of a plurality of screen panel assemblies 1054.

[00101] With reference to each of Figures 7, 8 and 9, it can be seen that each screen panel assembly 1054 comprises a central portion 1054a and a pair of adjustable side portions 1054b. Each of the side portions 1054b is movable between a retracted position and an extended position with respect to the central portion 1054a. In the retracted position, the side portions 1054b either overlap or underlap the central portion 1054a, and in the extended position, each of the side portions 1054b extends from a side edge of the central portion 1054a. Moreover, in this embodiment, each of the side portions 1054b telescopes with respect to the central portion 1054a. That is to say, each of the side portions 1054b is slidably received in a slot in a side edge of the central portion 1054a. In this way, each screen panel assembly 1054 can be widened by extension of the side portions 1054b, or narrowed by their retraction. By widening of screen panel assemblies 1054, gaps between adjacent perimeter safety screen assemblies 1000 can be bridged. Narrowing of screen panel assemblies 1054 is useful during transportation and handling, and especially when craning these into an in use position, and lowering them from the in use position.

[00102] The perimeter safety screen assembly 1000 further comprises a hanging screen assembly 1150 appending from the upper screen assembly 1050, and extending around a perimeter of the building, below the upper screen assembly 1050 and down to lower floors awaiting final fixing of windows and/or external walls.

[00103] The hanging screen assembly 1150 comprises a frame 1160, and a plurality of the screen panel assemblies 1054 depending from the frame 1160. That is to say, that each screen panel assembly 1054 comprises a central portion 1054a and a pair of adjustable side portions 1054b. Each of the side portions 1054b is movable between a retracted position and an extended position with respect to the central portion 1054a, as described above.

[00104] The frame 1160 for the hanging screen assembly 1150 comprises a pair of spaced apart elongate supports 1161, from which all of the screen panel assemblies 1054 depend.

[00105] Referring now to Figures 10 through 16, where there is illustrated a crossmember assembly 2000. The crossmember assembly 2000 comprises a central portion 2000a and a pair of adjustable end portions 2000b. Each of the end portions 2000b is movable between a retracted position and an extended position with respect to the central portion 2000a.

[00106] The central portion 2000a comprises a beam 2002 in the form of a length of square hollow section (SHS). Each of the end portions 2000b comprises a sleeve 2004 of SHS which is sized to slidably receive an end of the central portion 2000a (although this order could be reversed). Each of the end portions 2000b comprises a lifting lug 2006 extending from the sleeve 2004, and the sleeve 2004 terminates at a mounting plate 2008.

[00107] At or toward each end thereof, the central portion 2000a comprises an array of spaced apart holes 2010; similarly, the sleeve 2004 of each end portion 2000b comprises an array of spaced apart holes 2012. In use, the position of each end portion 2000b with respect to the central portion 2000a can be adjusted, and then set by passing a suitable pin or bolt through aligned holes 2010 and 2012 in each of the central and end portions 2000a and 2000b respectively.

[00108] In use, one or more of the crossmember assemblies 2000 is extended and secured (by bolting and/or welding) between the spaced apart elongate supports 1161. In use, the crossmember assemblies 2000 can be employed to hoist the hanging screen assembly 1150, by attaching a crane hook with respect to the lifting lugs 2006. Moreover, portions of the crossmember assemblies 2000 can be received in the mounts 100, so as to hang the hanging screen assembly 1150 from the upper screen assembly 1050.

[00109] The crossmember assembly 2000 is designed to be separable from the hanging screen assembly 1150 so that the number and position of crossmember assemblies 2000 can be adjusted and set as required to suit both weight and balance, and structural requirements of a particular installation.

[00110] The crossmember assembly 2000 is designed to be length adjustable to aid installation and removal, and also so that it can accommodate hanging screen assemblies of different dimensions (especially width).

[00111] Referring now to Figure 5 and Detail 1, where there is illustrated a winch rail 1800 depending from the upper screen assembly 1050. A winch carriage 1820 depends from the winch rail, and a winch depends 1840 from the winch carriage 1820 in turn.

[00112] The winch rail 1800 comprises an I-beam 1802, which extends transversely across a lower edge of the upper screen assembly 1050. The I-beam 1802 is bolted to the frame of the upper screen assembly 1050 via its upper flanges 1804.

[00113] The winch carriage 1820 comprises a roller yoke arrangement comprising a body 1822 with a generally parallel flange cross-section. This parallel flange cross-section comprises a floor 1824 and a pair of parallel flanges 1826 extending upwardly from the floor 1824. An inwardly directed roller 1828 is secured with respect to each of the flanges 1826. These rollers 1826 are disposed either side of the I-beam 1802, and so as to run along a lower flange 1806 of the I-beam 1802.

[00114] An eye bolt 1830 extends through the floor 1824 of the parallel flange cross-section. The winch 1840 is suspended from this eye bolt 1830.

[00115] The winch 1840 is used to lift panels from a lower floor. The panels would be stacked horizontally on the lower floor, and each panel is connected to the winch line and lifted vertically. The winch 1840 can move laterally along the winch rail 1800 to position the panel for fixing.

[00116] The hanging screen assembly 1150 may further comprise one or more platforms or walkways 170 which extend towards the building. Optionally, one or more of these platforms or walkways 170 may comprise a flap 190, which is distal from the screen panel assemblies 1054, and which is adapted to move between a closed position in which the flap bridges (and covers) a gap between the platforms 170 and the building, and an open position in which the gap is uncovered. When each of the flaps is opened, external windows or cladding can be lowered into position from above using the winch 1840, and secured by workers standing on the platforms 170 inside of the safety screens.

[00117] The perimeter safety screen assembly according to the present disclosure provides a greater reach or range of screening, while overcoming difficulties associated with moving and assembling a larger screen.

[00118] Throughout the specification and the claims that follow, unless the context requires otherwise, the words “comprise” and “include” and variations such as “comprising” and “including” will be understood to imply the inclusion of a stated integer or group of integers, but not the exclusion of any other integer or group of integers.

[00119] The reference to any prior art in this specification is not, and should not be taken as, an acknowledgement of any form of suggestion that such prior art forms part of the common general knowledge.

[00120] It will be appreciated by those skilled in the art that the invention is not restricted in its use to the particular application described. Neither is the present invention restricted in its preferred embodiment with regard to the particular elements and/or features described or depicted herein. It will be appreciated that the invention is not limited to the embodiment or embodiments disclosed, but is capable of numerous rearrangements, modifications and substitutions without departing from the scope of the invention as set forth and defined by the following claims.

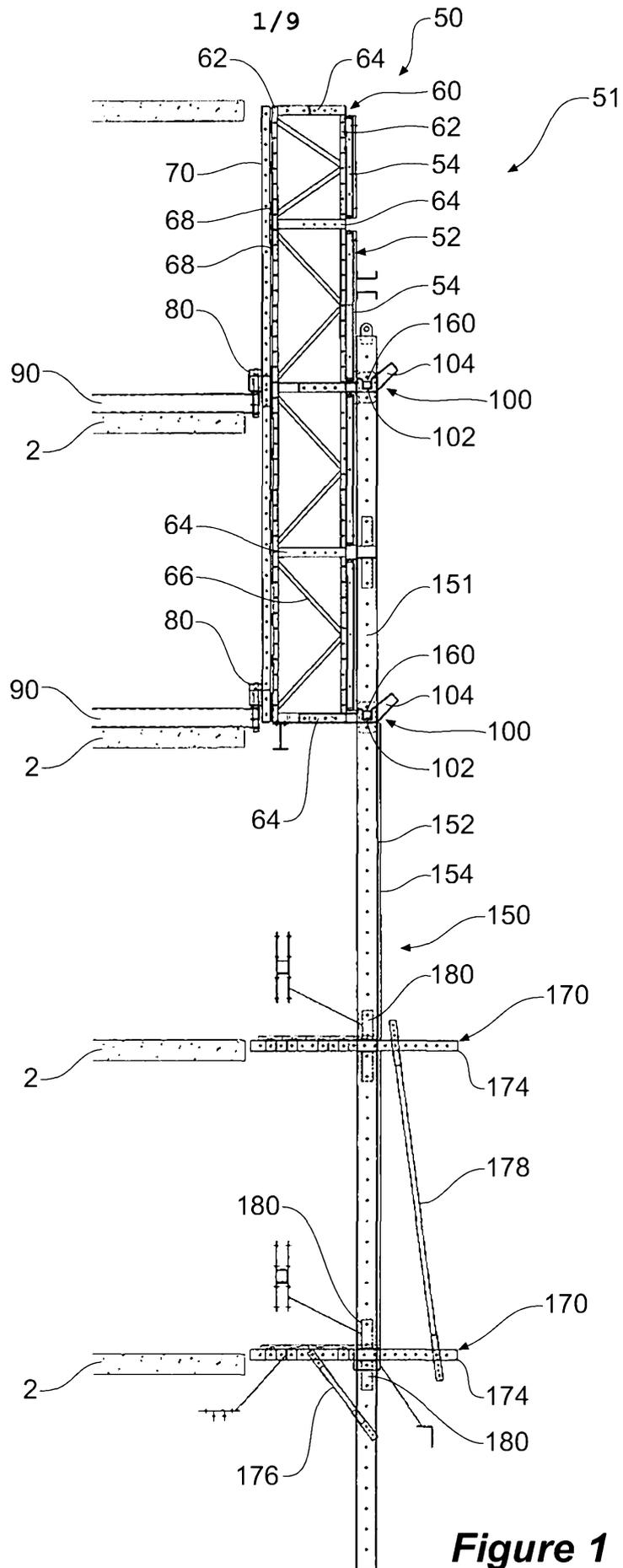
CLAIMS

1. A perimeter safety screen assembly for a building, the perimeter safety screen assembly comprising an upper screen assembly, and a hanging screen assembly appending from the upper screen assembly, and extending below the upper screen assembly.
2. The perimeter safety screen assembly of claim 1, wherein at least one of the upper screen assembly or the hanging screen assembly is adapted so that the hanging screen assembly can be appended to, and removed from the upper screen assembly whilst upper screen assembly is in use on the building.
3. The perimeter safety screen assembly as in either of the preceding claims, wherein the upper screen assembly is a climbing screen assembly adapted to climb with respect to the building.
4. The perimeter safety screen assembly as in any one of the preceding claims, wherein the upper screen assembly comprises a base for securing the perimeter safety screen assembly with respect to the building, a frame depending from the base, and a screen depending from the frame.
5. The perimeter safety screen assembly as in any one of the preceding claims, wherein the hanging screen assembly comprises a frame, and a screen depending from the frame.
6. The perimeter safety screen assembly as in any one of the preceding claims, wherein the hanging screen assembly depends from the upper screen assembly on an outer side (relative to the building) of the screen of the upper screen assembly.
7. The perimeter safety screen assembly as in either of claims 5 or 6, wherein the upper screen assembly comprises at least one mount for the hanging screen.
8. The perimeter safety screen assembly of claim 7, wherein the upper screen assembly comprises a plurality of mounts.
9. The perimeter safety screen assembly as in either of claims 7 or 8, wherein the upper screen assembly comprises a plurality of vertically spaced apart mounts.
10. The perimeter safety screen assembly as in any one of claims 7 through 9, wherein the or each of the mounts is located on an outer side of the screen of the upper screen assembly.

11. The perimeter safety screen assembly as in any one of claims 7 through 10, wherein the or each of these mounts comprises a saddle for nestably receiving a portion of the hanging screen assembly.
12. The perimeter safety screen assembly of claim 11, wherein the or each portion of the hanging screen assembly comprises a crossmember assembly.
13. The perimeter safety screen assembly of claim 12, wherein the hanging screen comprises a plurality of vertically spaced apart crossmember assemblies.
14. The perimeter safety screen as in either of claims 12 or 13, wherein the or each of the crossmember assemblies is located on an inner side of the screen of the hanging screen assembly.
15. The perimeter safety screen assembly as in any one of claims 8 through 14, wherein each of the mounts comprises a mounting guide for guiding at least a portion of one of the crossmember assemblies into the saddle.
16. The perimeter safety screen assembly as in any one of claims 12 through 15, wherein the or each crossmember assembly comprises a central portion and a pair of adjustable end portions.
17. The perimeter safety screen assembly of claim 16, wherein each of the end portions is movable between a retracted position and an extended position with respect to the central portion.
18. The perimeter safety screen assembly as in any one of the preceding claims, wherein the screen for each of the upper screen assembly and the hanging screen assembly comprises a plurality of screen panel assemblies.
19. The perimeter safety screen assembly of claim 18, wherein each screen panel assembly comprises a central portion and a pair of adjustable side portions.
20. The perimeter safety screen assembly of claim 19, wherein each of the side portions is movable between a retracted position and an extended position with respect to the central portion.
21. A perimeter safety screen assembly for a building, the perimeter safety screen assembly comprising an upper screen assembly, and a hanging screen assembly appending from the upper screen assembly, and extending below the upper screen assembly, wherein at least one of the upper screen assembly or the hanging screen assembly is adapted so that the hanging screen assembly can be appended to, and removed from the upper screen assembly whilst upper screen assembly is in use on the building.

22. A hanging screen assembly for a perimeter safety screen assembly for a building, the perimeter safety screen assembly comprising an upper screen assembly and the hanging screen assembly, where the hanging screen assembly is adapted to append from the upper screen assembly, and extend below the upper screen assembly.

23. An upper screen assembly for a perimeter safety screen assembly for a building, the perimeter safety screen assembly comprising the upper screen assembly and a hanging screen assembly, where the upper screen assembly is adapted so that the hanging screen assembly can append therefrom, and extend below the upper screen assembly.



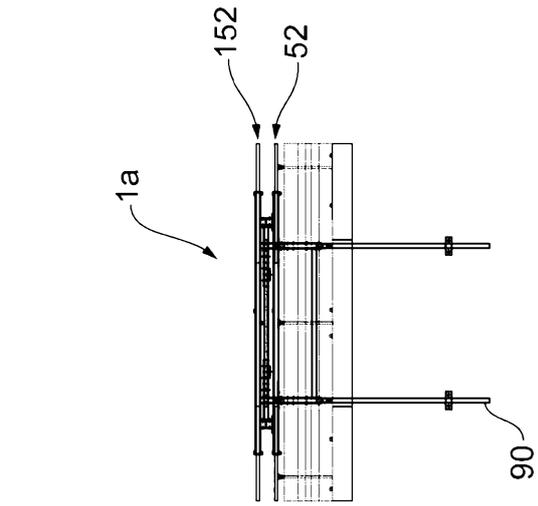


Figure 4

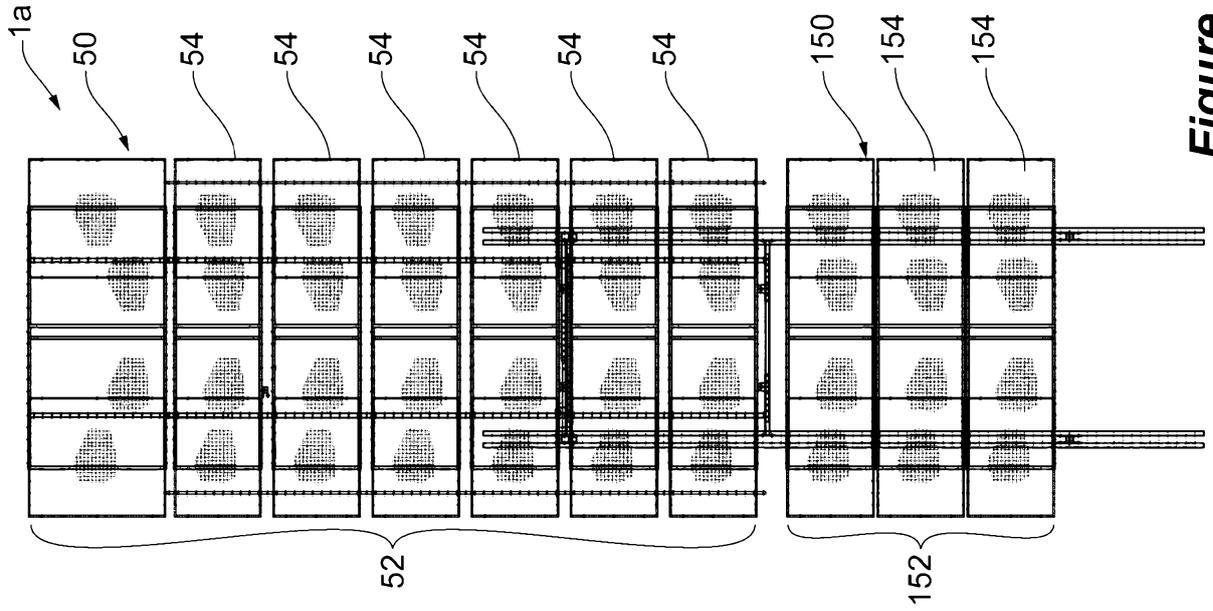


Figure 3

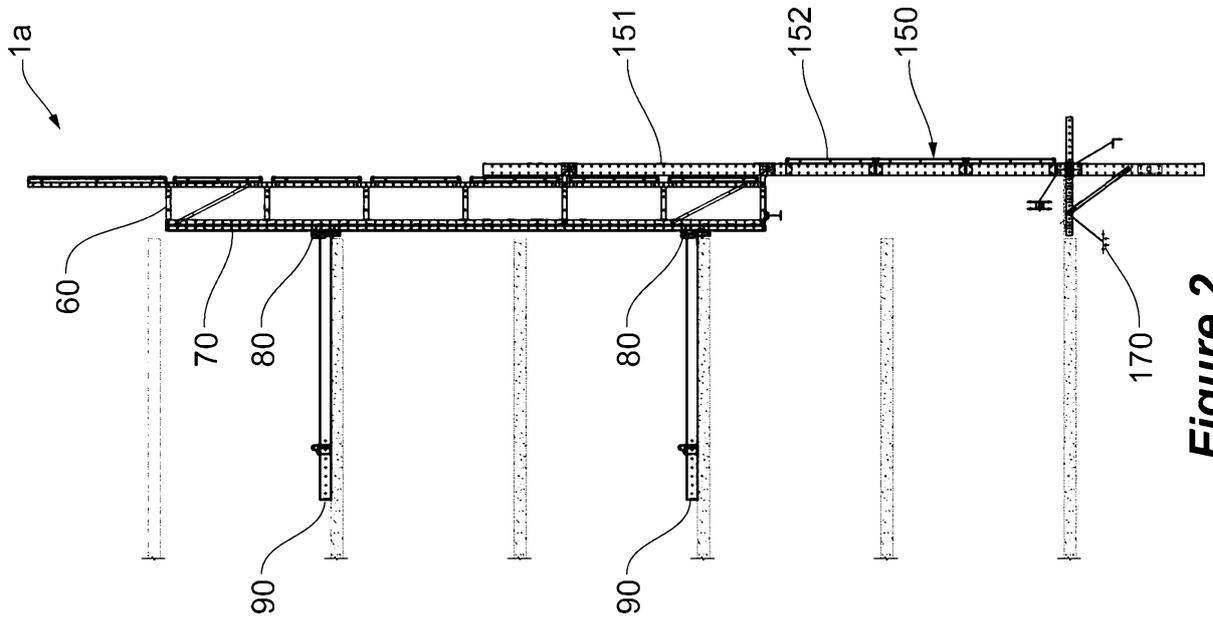


Figure 2

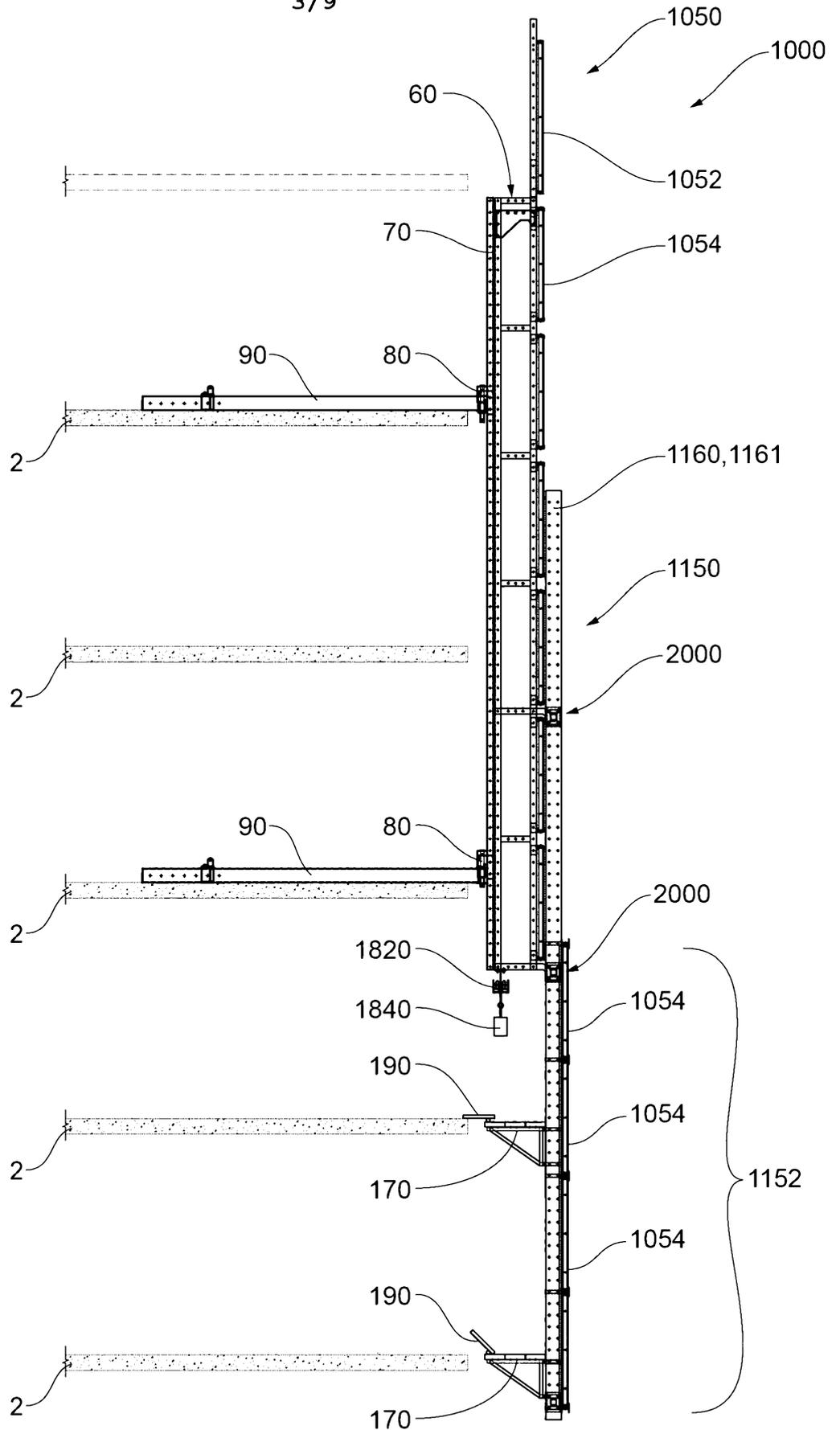


Figure 5

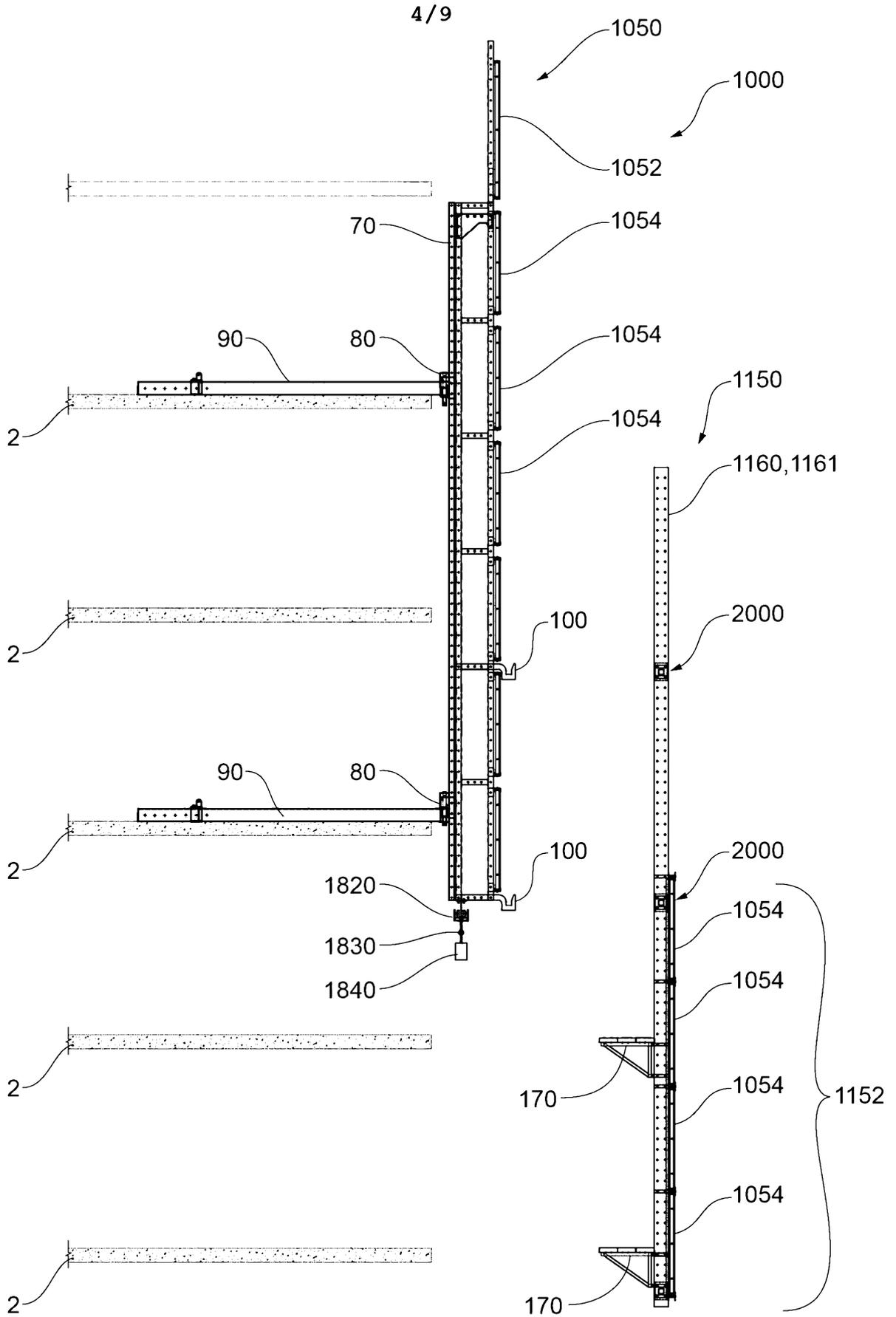


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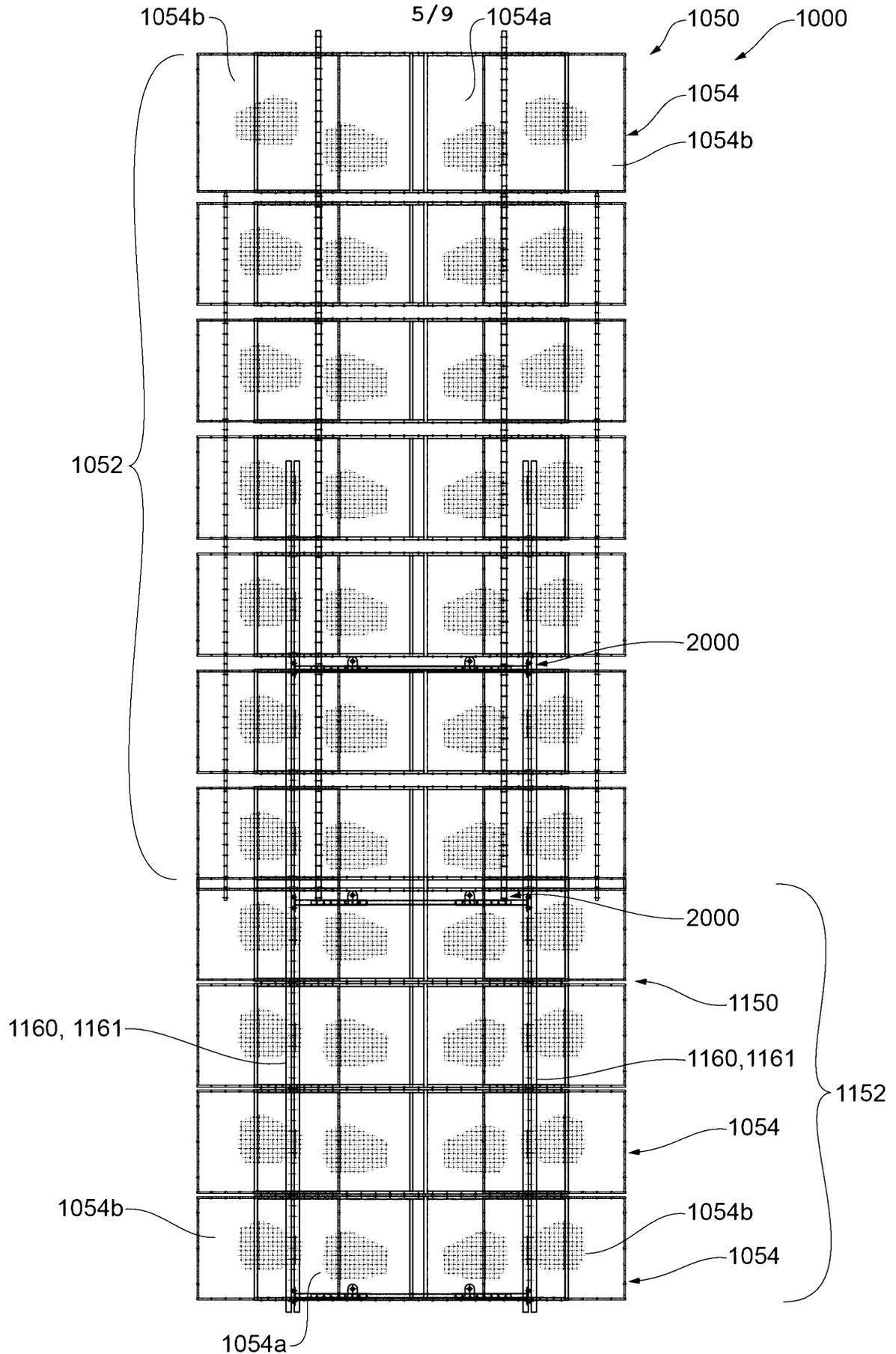


Figure 7

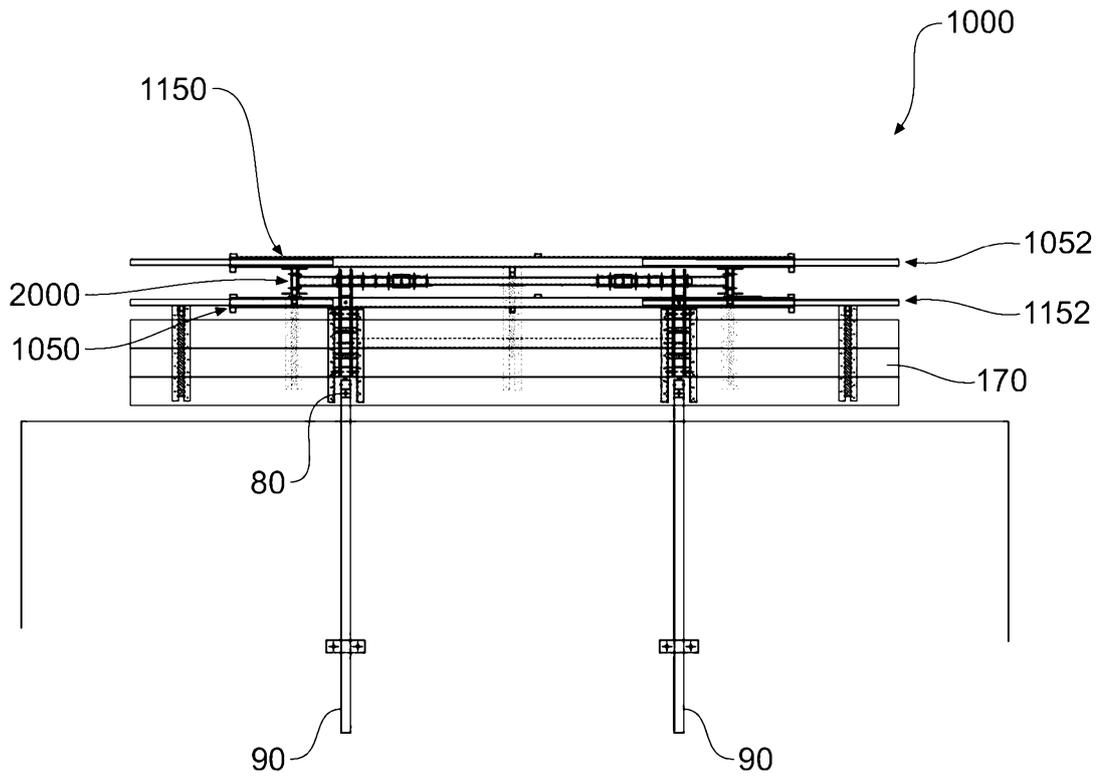


Figure 8

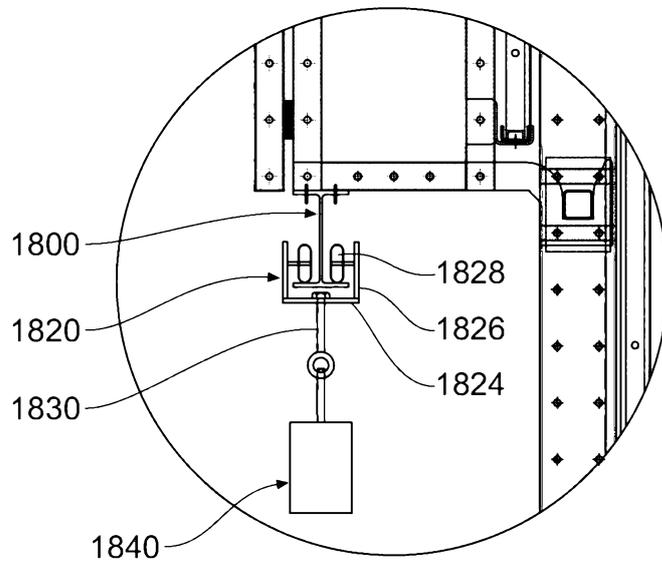


Figure 9

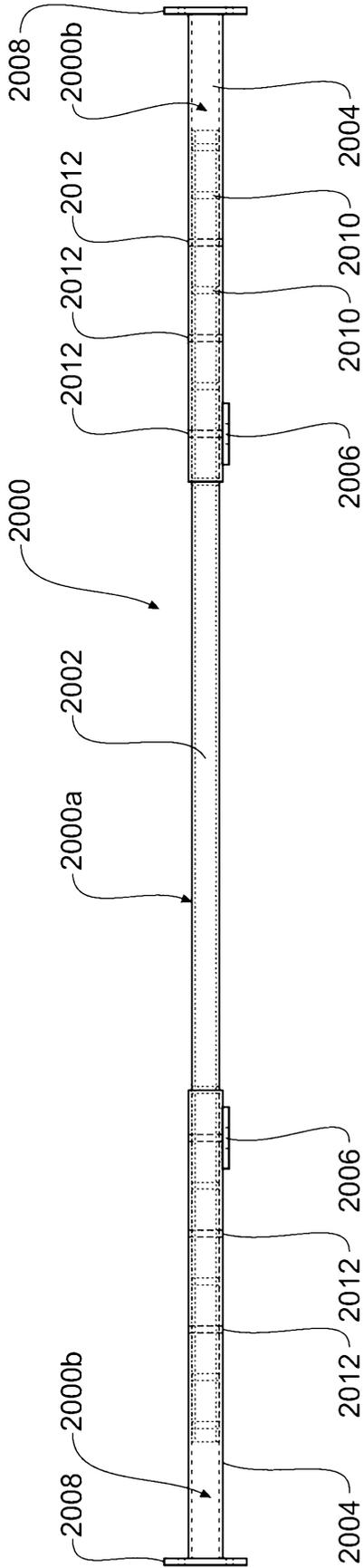


Figure 10

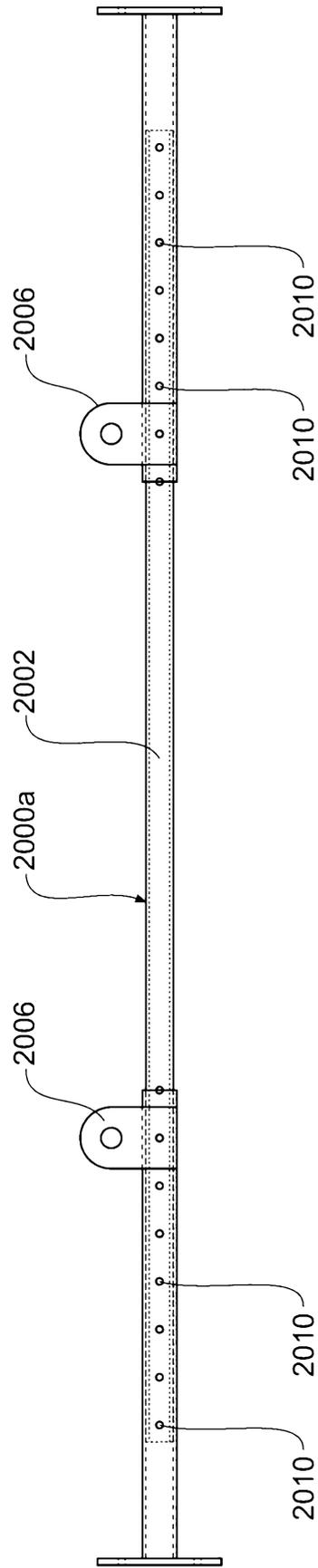


Figure 11

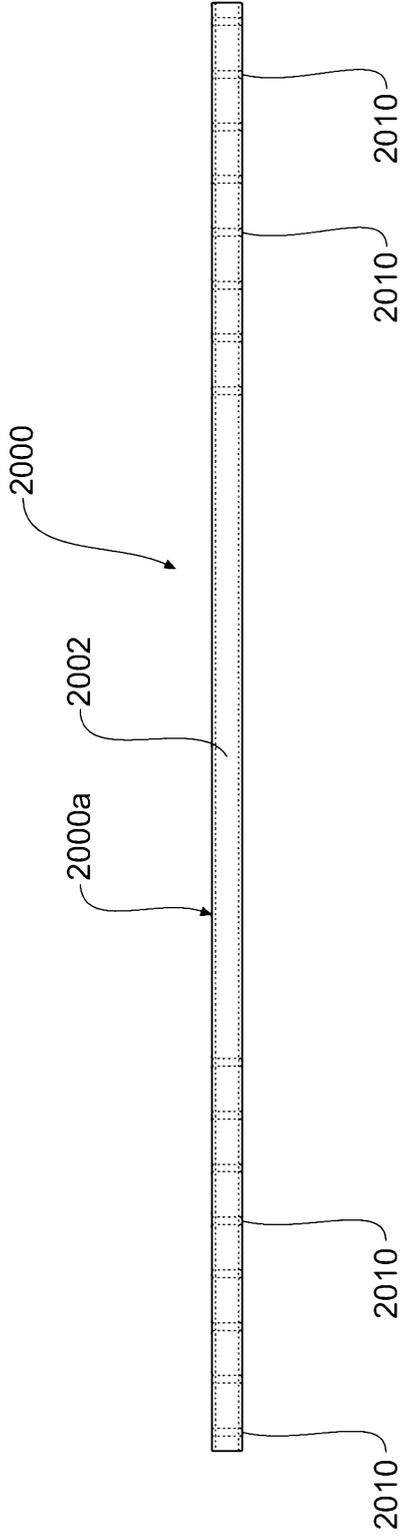


Figure 12

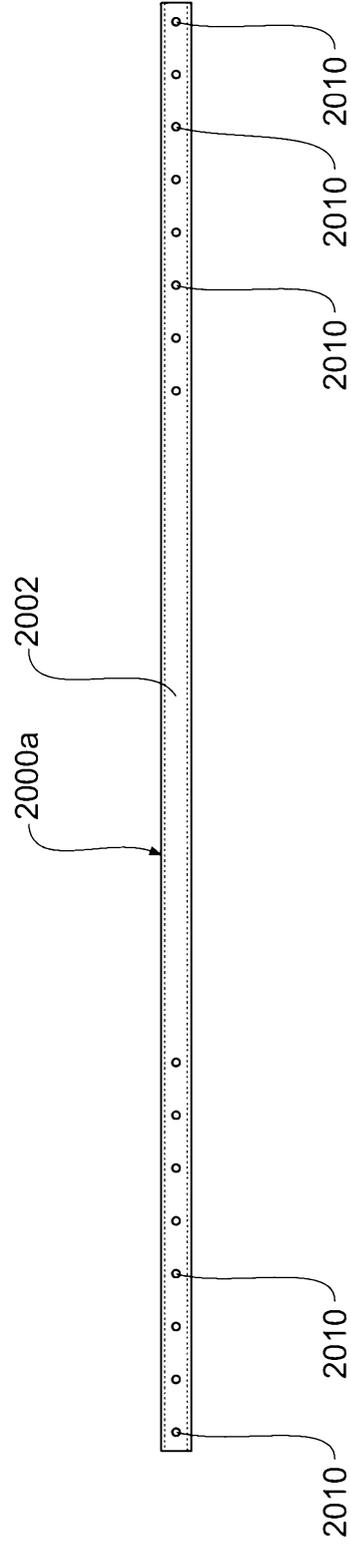


Figure 13

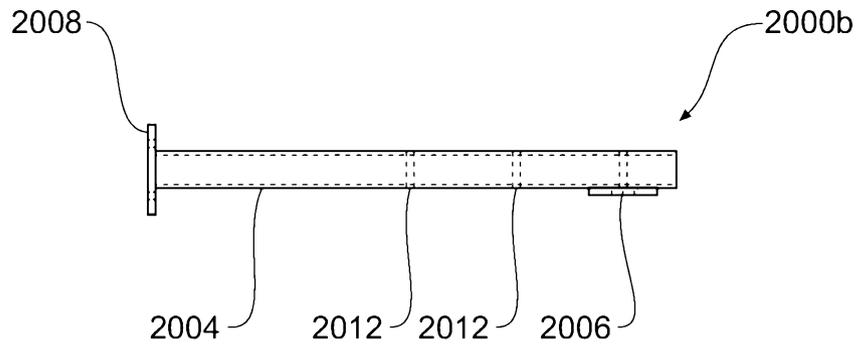


Figure 14

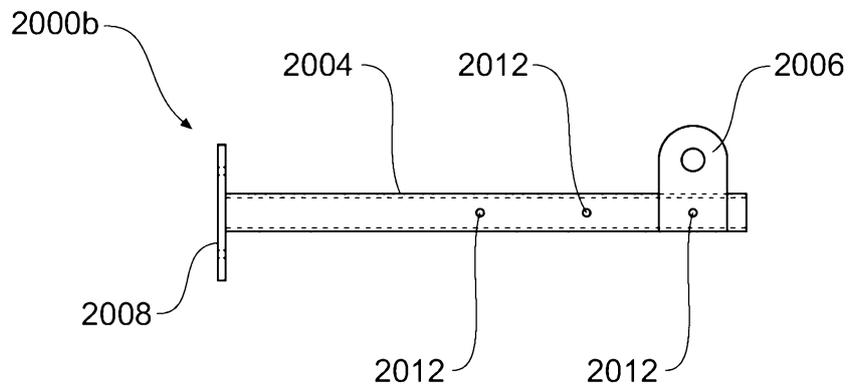


Figure 15

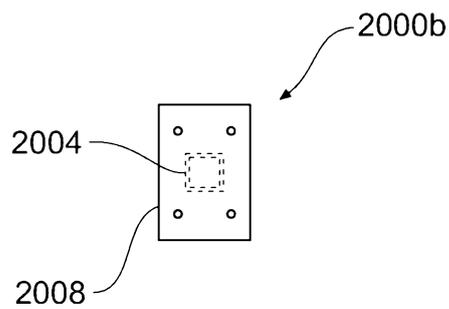


Figure 16