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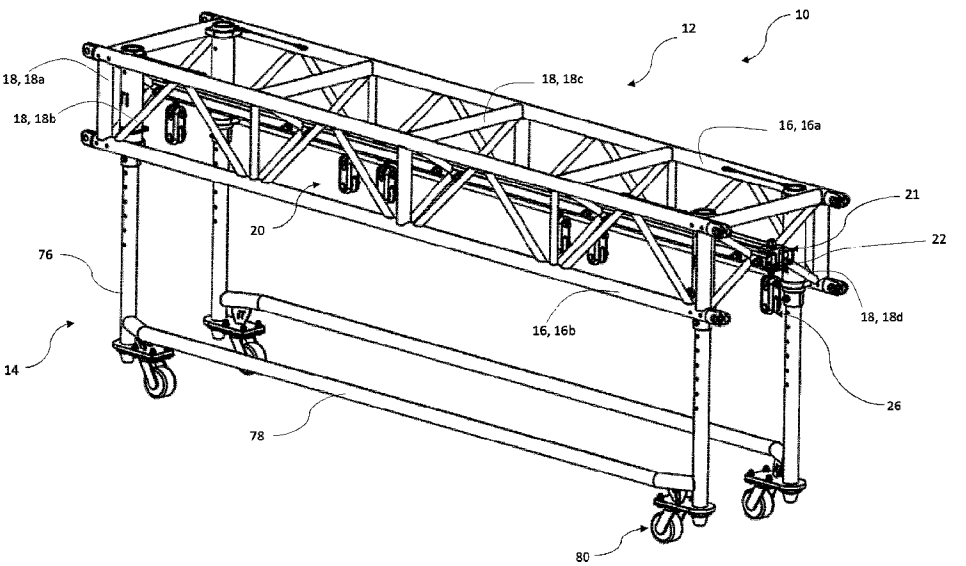

(57) Abrégé/Abstract:
A truss assembly is provided. The truss assembly includes a truss section with a plurality of chords extending longitudinally and defining a volume therebetween. The truss section further includes a sliding rail positioned within the volume defined by the chords, and is also connected to the plurality of chords. The truss assembly also includes at least one bracket which has a first portion slidably coupled to the sliding rail and a second portion connected to the first portion and defining a hanging point adapted to support a load.

ABSTRACT

A truss assembly is provided. The truss assembly includes a truss section with a plurality of chords extending longitudinally and defining a volume therebetween. The truss section further includes a sliding rail positioned within the volume defined by the chords, and is also connected to the plurality of chords. The truss assembly also includes at least one bracket which has a first portion slidably coupled to the sliding rail and a second portion connected to the first portion and defining a hanging point adapted to support a load.

Date Reçue/Date Received 2023-03-09

TRUSS SUPPORT SYSTEM FOR A DISPLAY MODULE

TECHNICAL FIELD

[001] The technical field generally relates to support systems for the entertainment industry, and more specifically relates to a truss assembly for supporting equipment such as display modules, lights and/or speakers.

BACKGROUND

[002] Events such as live entertainment, concerts, corporate event services, digital signage and displays, among others, often use modular screens or video tiles which interconnect to form a single large screen, such as LED video walls. The modular screens are mounted to a rig configured to be constructed so as to support the modular screens in an upright and/or raised position. These structures generally include box trusses connected to one another and along which the modular screens are connected and/or hung from. The modular screens are generally supported by connectors such as non-rigid fabric and/or metal wire core fabric slings provided at predetermined locations. Installing these connectors is both time consuming and can result in misalignment of one or more screens, adversely affecting the quality of the assembled video wall, or causing damage to the modular screens during assembly.

[003] It would thus be particularly useful to be able to provide an improved device or assembly which would be able to overcome or at the very least minimize some of known drawbacks and/or deficiencies associated with conventional methods and/or devices, for example.

SUMMARY

[004] According to one aspect, there is provided a truss assembly comprising a truss section having a plurality of chords extending longitudinally and defining a volume therebetween, the truss section further including a sliding rail positioned within the volume and connected to the plurality of chords; and at least one bracket having a first portion slidably coupled to the sliding rail and a second portion connected to the first portion and defining a hanging point adapted to support a load.

[005] According to another aspect, there is provided a truss assembly comprising a truss support structure; a bracket coupled to the truss support structure and adapted to support a

Date Reçue/Date Received 2023-03-09

load; a wheel assembly comprising a frame connectable to the truss support structure and wheels coupled to the frame, the wheel assembly being operable between a mobile configuration, where the frame and the wheels extend below the truss support structure to enable displacement thereof, and a stationary configuration, where the frame and the wheels extend above the truss support structure or are disconnected from the truss support structure; and an anti-sway mechanism connectable to the frame and configured to prevent the load from impacting the wheel assembly and the truss support structure when in the mobile configuration.

BRIEF DESCRIPTION OF THE FIGURES

[006] FIG. 1 is a perspective view of a truss assembly in a mobile configuration, according to an embodiment.

[007] FIG. 2 is a front elevation view of the truss assembly of FIG. 1, showing a sliding rail extending along a truss section, according to an embodiment.

[008] FIG. 3 is a side elevation view of the truss assembly of FIG. 1, showing a bracket coupled between a pair of tubes of the sliding rail, according to an embodiment.

[009] FIG. 4 is a perspective view of the bracket shown in FIG. 3, coupled to the sliding rail and defining a hanging point used to support a load, according to an embodiment.

[010] FIG. 5A is a perspective view of the bracket shown in FIG. 3, showing a first section having an "I-shape" and a second section defining the hanging point, according to an embodiment.

[011] FIG. 5B is a first cross-section view of the bracket shown in FIG. 5A, showing a threaded bolt extending between the first and second sections, according to an embodiment.

[012] FIG. 5C is a second cross-section view of the bracket shown in FIG. 5A, showing a bolt extending through the second section to define the hanging point, according to an embodiment.

[013] FIG. 6 is a perspective view of the truss assembly shown in FIG. 1, showing a display module connected to a plurality of brackets, according to an embodiment.

[014] FIG. 7 is a front elevation view of the truss assembly of FIG. 5, showing an anti-sway mechanism provided at opposite ends of the truss assembly for protecting the display module.

Date Reçue/Date Received 2023-03-09

[015] FIG. 8 is an enlarged view of the anti-sway mechanism shown in FIG. 7, showing a protection brace for retaining the display module in place, according to an embodiment.

[016] FIG. 9 is a perspective view of a plurality of the truss assemblies as shown in FIG. 6, showing the truss sections and corresponding display modules being connected to one another to form a larger display module, according to an embodiment.

[017] FIG. 10 is a perspective view of the truss assembly shown in FIG. 1, showing a wheel assembly extending above the truss section, according to an embodiment.

[018] FIG. 11 is a perspective view of the truss assembly shown in FIG. 10, showing the wheel assembly removed from the truss section, according to an embodiment.

[019] FIG. 12 is a perspective view of a plurality of truss assemblies as shown in FIG. 11, showing the truss section of each truss assembly supporting respective display modules connected to one another to form a large display module, according to an embodiment.

[020] FIG. 13 is a perspective view of another embodiment of a truss assembly, showing a wheel assembly in a mobile configuration.

[021] FIG. 14 is an enlarged perspective view of the truss assembly of FIG. 13, showing a pair of central tubes welded to one another, according to an embodiment.

[022] FIG. 15 is a side elevation view of the truss assembly of FIG. 13, showing connection members welded between the pair of central tubes, according to an embodiment.

DETAILED DESCRIPTION

[023] As will be explained below in relation to various implementations, the present disclosure describes apparatuses, systems and methods for the connection of equipment to support structures, such as truss assemblies, for example.

[024] In some implementations, the present disclosure describes devices and systems for connecting various equipment, such as display modules (e.g., screens, such as LED screens), lights and speakers, to a truss section. More particularly, the present disclosure describes a truss assembly having a truss section provided with an adjustable support system configured to connect the equipment to the truss section. As will be described below, the support system includes a sliding rail extending longitudinally along the truss section and a plurality of brackets slidably coupled to the sliding rail. The brackets are shaped and adapted

Date Reçue/Date Received 2023-03-09

to have the equipment be connected thereto. As such, it is noted that the brackets can be moved (e.g., slid) along the sliding rail to adjust their position to the generally static connection points of the equipment. In other words, the support system of the truss assembly can be adjusted to facilitate connection of different equipment to the truss section. The truss section can then be installed in a desired configuration and/or location, thereby similarly positioning the corresponding equipment in a desired location.

[025] In some embodiments, the truss assembly can include a modular truss section adapted to be connected to other adjacent truss sections. The equipment connected to these truss sections can therefore be combined or connected to one another. For example, respective display modules of each truss section can be assembled with one another to form a larger display module. More particularly, screens can be assembled to form a larger screen, such as those used for entertainment purposes, for example, during sporting events, concerts and music festivals, etc.

[026] The truss assembly can also include a transportation system, such as wheel assemblies provided with one or more wheels, connectable to the truss section to facilitate transporting (e.g., rolling) the truss section to a desired location. The wheel assemblies can be connected to the truss section to configure the truss assembly in a mobile configuration, where the wheels extend below the truss section so as to be easily displaced. Moreover, the wheel assemblies can be connected to the truss section to configure the truss assembly in a stationary configuration, where the wheels extend above the truss section to liberate the area below the truss section, such as the area where the equipment is connected to and/or hangs from the truss section. Alternatively, or additionally, the wheel assemblies can be disconnected from the truss section to configure the truss assembly in the stationary configuration. The transportation system can further include an anti-sway mechanism configured to retain the equipment connected to the truss section during displacement thereof in order to prevent undesired movement (e.g., swinging) and damage to the equipment.

[027] Referring to FIGS. 1 to 3, an embodiment of a truss assembly 10 is shown. The truss assembly 10 includes a truss section 12 and a wheel assembly 14 removably connected to the truss section 12 and adapted to facilitate displacement of the truss section. As will be described further below, the truss section 12 also includes a support system 20 secured thereto and adapted to support a load, such as display modules, among other possible equipment. In the context of the present disclosure, the support system 20 is described as being configured to support display modules (e.g., LED screens or tiles). However, it should

Date Reçue/Date Received 2023-03-09

be noted that the support system 20 is not limited to supporting display modules and can be adapted to support various other loads and equipment.

[028] In some embodiments, the truss section 12 has longitudinal members, or chords 16, extending generally along a longitudinal axis L_1 (seen in FIG. 2). As seen in Figures 1 to 3, the truss section 12 can include four (4) chords 16 extending substantially parallel to one another, such as parallel to the longitudinal axis L_1. For example, the truss section 12 can correspond to a box truss, having a pair of top chord 16a and a pair of bottom chords 16b. In some embodiments, the chords 16 are positioned to define an area, or internal volume 15 therebetween. In some embodiments, the internal volume 15 has a substantially rectangular cross-section. However, it is appreciated that other configurations are possible and may be used, such as a diamond-shape cross-section, or a triangular-shape cross-section using three (3) chords, for example.

[029] The truss section 12 also includes web members extending between different components of the truss section 12. More specifically, the web members can include chord web members 18 extending between the chords 16 for connecting the chords to one another. In this embodiment, the chord web members 18 extend between and connect the bottom chords 16b to the top chords 16a and extend between and connect the top chords 16a to one another. In other words, and as seen in FIG. 3, the truss section 12 does not include chord web members extending directly between the bottom chords 16b, thereby leaving the corresponding area generally free of obstructions. The web members 18 can extend orthogonally between a pair of chords 16 (e.g., web members 18a and 18c), or extend at an angle between a pair of chords 16 (e.g., web members 18b). However, it is appreciated that, any other suitable number and configurations of web members 18 can be used, such as having additional web members 18 extending between and connecting the bottom chords 16b, for example.

[030] Still referring to FIGS. 1 to 3, the support system 20 is configured to support one or more display modules. In this embodiment, the support system 20 can include a sliding rail 21 connected to one or more of the chords 16, and at least one bracket 26 slidably coupled to the sliding rail 21 and adapted to support the display module. As seen in FIGS. 2 and 3, the sliding rail 21 can extend generally parallel to the chords 16 and be positioned within the internal volume 15. The sliding rail 21 is connected to the chords 16 by one or more web members, such as rail web members 18d. The rail web members 18d can extend between and connect each chord 16 to the sliding rail 21, although other configurations are possible.

Date Reçue/Date Received 2023-03-09

The sliding rail 21 can be positioned substantially centrally with respect to the chords 16 such that the rail web members 18d and chords 16 equally support the sliding rail 21. It is noted that the central position of the sliding rail 21 can assist in providing a generally uniform load distribution across the truss assembly when a load (e.g., equipment, display module(s), etc.) is supported. In the illustrated embodiment, the chords 16, web members 18 and sliding rail 21 are welded together. However, it is appreciated that other configurations and connection methods are possible and can be used, such as connecting various components together using fasteners, for example.

[031] Now referring to FIGS. 4 to 5C, in addition to FIGS. 1 to 3, in this embodiment, the sliding rail 21 comprises a pair of tubes 22 extending along the longitudinal axis L_1 parallel to the chords 16. The tubes 22 are illustratively spaced from one another to define a channel 24 therebetween. As will be further defined below, the bracket 26 is shaped and adapted to slidably engage the sliding rail 21 in the channel 24 such that the position of the bracket 26 along the sliding rail 21 can be adjusted. The support system 20 illustratively includes a plurality of brackets 26 distributed along the sliding rail 21 (e.g., along a length of the tubes 22) for supporting respective loads and/or respective portions of a single load. The tubes 22 are additionally secured to one another by fasteners 27 (e.g., bolts) at a plurality of connection points along the tubes 22. At least some of the fasteners 27 extend through the channel 24 and define bracket stops adapted to limit movement of the bracket 26 along the channel 24 (e.g., a pair of bracket stops can define a range of motion of one or more brackets positioned therebetween).

[032] In the illustrated embodiment, the bracket 26 has a first portion 28 (or top portion) adapted to slidably engage the sliding rail 21 (e.g., the channel 24), and a second portion 30 (or bottom portion) connected to the first portion 28 and defining a hanging point 31 adapted to support and/or be connected to the display module. As seen in FIGS. 4 and 5A-5C, in this embodiment, the first portion 28 has a generally sideways H-shape (or I-shape) adapted to extend between, above and below the pair of tubes 22. It is noted that this configuration of the first portion 28 can assist in maintaining a desired orientation of the bracket 26 with respect to the tubes 22 while also allowing the bracket 26 to slide along the tubes 22 within the channel 24. More specifically, the first portion 28 can include a central segment 32 adapted to extend between the tubes 22 within the channel 24, and a top segment 34 extending from the central segment 32 at a top end thereof and adapted to engage a top surface of the tubes 22 to prevent disengagement of the bracket 26 from the channel 24.

Date Reçue/Date Received 2023-03-09

[033] The first and second portions 28, 30 are connected together via an adjustable connector 40 configured to enable adjustment of the position of at least one of the first and second portions 28, 30 relative to one another. In some embodiments, the adjustable connector 40 includes a threaded rod 41 extending between and connecting the first and second portions 28, 30 together. More specifically, in this embodiment, the first portion 28 comprises a threaded aperture 38, with the threaded rod 41 being adapted to operatively engage the threaded aperture 38. Moreover, the threaded rod 41 can be secured to and extend from the second portion 30. It is thus noted that the threaded rod 41 can be threaded through (e.g., screwed into) the threaded aperture 38, thereby adjusting the position of the second portion 30 relative to the first portion 28.

[034] The threaded aperture 38 can extend through the entire structure of the first portion 28, thereby enabling the threaded rod 41 to pass through the first portion 28 and be secured thereto, for example, using a nut 42, as seen in FIGS. 4 and 5A. In this embodiment, the first portion 28 can further include a bottom segment 36 configured to engage the central segment 32 and at least one of the tubes 22 from below. More specifically, the bottom segment 36 can include a hole, such as a threaded hole 44, thereby enabling the bottom segment 36 to be threaded onto the threaded rod 41. It is therefore noted that the bottom segment 36 can be threaded along the threaded rod 41 to engage the central segment 32 and tubes 22 from below in order to fasten or "squeeze" the tubes 22 between the top segment 34 and the bottom segment 36 and operate the bracket 26 in a secured configuration. This configuration can assist in at least partially securing the bracket 26 along the sliding rail 21. It should be appreciated that the bottom segment 36 can be rotated in the opposite direction to disengage the tubes 22 and operate the bracket 26 in a moving configuration, allowing sliding movement of the bracket 26 along the tubes 22.

[035] Referring more specifically to FIGS. 5A and 5B, the threaded rod 41 may include a locking mechanism 45 configured to secure the threaded rod 41 in a desired configuration/position. In this embodiment, the locking mechanism 45 includes a slot 46 defined along a length of the threaded rod 41 and a stop pin 48 shaped and adapted to engage the slot 46 to at least partially limit movement of the threaded rod 41. The stop pin 48 can extend through the first portion 28 (e.g., through the central segment 32) to engage the slot 46 when the threaded rod 41 is engaged with the threaded aperture 38. It is noted that engagement of the slot 46 by the stop pin 48 can prevent rotation of the threaded rod 41, thereby securing the threaded rod 41, and thus the second portion 30, in place relative to the first portion 28. In addition, the stop pin 48 can be adapted to abut against a top end or a

Date Reçue/Date Received 2023-03-09

bottom end of the slot 46. It is thus noted that the stop pin 48 can set a maximum and a minimum amount of vertical movement (i.e., a range of motion) of the threaded rod 41 when engaged within the slot 46.

[036] In this embodiment, the threaded rod 41 can be secured to the second portion 30 such that rotation of the second portion 30 engages the threaded rod 41 in rotation to adjust its position along the threaded aperture 38. The second portion 30 illustratively includes a top cutout section 52 defined proximate a top end thereof and adapted to receive the threaded rod 41. The threaded rod 41 can be secured within the top cutout section 52 via a top bolt 56 extending through the top cutout section 52. More specifically, in this embodiment, the threaded rod 41 includes an aperture 58 defined proximate a bottom end thereof for receiving the top bolt 56. The top bolt 56 thereby secures the threaded rod 41 to the second portion 30, thus enabling relative movement of the second portion 30 relative to the first portion 28 when screwing and/or unscrewing the threaded rod 41 through the first portion 28. In the illustrated embodiment, the top bolt 56 can be secured through the second portion 30 by a nut connected to an end thereof, although other configurations are possible.

[037] Referring to FIG. 5C, in addition to FIGS. 5A and 5B, the second portion 30 can include a bottom cutout section 54 defined proximate a bottom end thereof and adapted for receiving a bottom bolt 66 therethrough. In this embodiment, the bottom bolt 66 extends through the bottom cutout section 54 in a manner defining the hanging point 31 for supporting the display module (or any other suitable load), as will be described further below. Accordingly, the threaded rod 41 enables vertical adjustment of the second portion 30 relative to the first portion 28 to adjust a position of the hanging point 31, or height of the load, as well as configuring of the bracket 26 into one of the secured configuration and the moving configuration via the bottom segment 36 to enable horizontal (or longitudinal) adjustment of the bracket 26 along the tubes 22.

[038] Referring now to FIGS. 6 to 11, the wheel assembly 14 will be described in greater detail. The wheel assembly 14 can be connected to the truss section 12 in a mobile configuration, where the truss assembly 10 is moveable on the ground via wheels, and can be connected to the truss section 12 in a stationary configuration, where the wheel assembly 14 is either removed or extends above the truss section 12.

[039] In this embodiment, the wheel assembly 14 includes a frame 74 connectable to the truss section 12, and further includes wheels 80 coupled to the frame 74. It is thus noted that, in the mobile configuration, the frame 74 extends below the truss section 12 to have the

Date Reçue/Date Received 2023-03-09

wheels 80 rolling on the ground, as seen in FIGS. 6 and 7, and that, in the stationary configuration, the frame 74 and wheels 80 extend above the truss section 12, as seen in FIG. 10, or are disconnected from the truss section 12, as seen in FIG. 12.

[040] In this embodiment, the frame 74 can include a pair of frame members 75 connected to respective sides of the truss section 12 across a width thereof. Each frame member 75 can have a pair of legs 76 removably connectable to the truss section 12, such as to opposite ends of the truss section 12, for example. Each frame member 75 can also include a leg support member 78 extending between and connecting the legs 76 to one another. In this embodiment, the leg support member 78 can include a generally horizontal bar extending between the legs 76 of a given frame member 75, although other configurations are possible.

[041] Each leg 76 can have a proximal end 77a removably connected to the truss section 12, and a distal end 77b provided with a wheel 80, as illustrated. In this embodiment, the truss section 12 can include receiving members 72 configured to receive respective legs 76 of the wheel assembly 14. Each receiving member 72 can be mounted to respective corners of the truss section 12 and is secured to one or more web members 18. The receiving members 72 are sized and shaped to receive one of the legs 76 therein. The legs 76 can be connected to respective receiving members 72 via any suitable manner, such as via a slot and pin mechanism, for example. In this embodiment, each leg 76 has a plurality of slots 90 defined along a length thereof for alignment with a corresponding slot 82 of the receiving member 72. The plurality of slots 90 allows a height of the legs 76 to be adjusted. In addition, the receiving members 72 can be generally tubular, with openings at both ends thereof. As such, the legs 76 can be connected to a corresponding one of the receiving members 72 from below (FIG. 6) or from above (FIG. 10).

[042] Referring now to FIGS. 11 and 12, in this embodiment the wheel assembly 14 has been disconnected and removed from the truss section 12. This configuration can be useful during and/or after installation on site since the legs 76 would not block viewing of the display modules, for example. Alternatively, the stationary configuration can include connecting the wheel assembly 14 above the truss section 12, as seen in FIG. 10. This configuration can be useful since the wheel assembly 14 does not need to be stored at a separate location while the truss section 12 is installed and in use. Furthermore, the legs 76 and leg support members 78 can act as guard rails, for example, if someone walks across/atop the truss sections 12 (e.g., for maintenance, etc.).

Date Reçue/Date Received 2023-03-09

[043] Referring more specifically to FIGS. 6 to 9, a load 200 is illustratively connected to the truss assembly 10, e.g., to the support system 20. In the illustrated embodiment, the load 200 includes a plurality of display modules 202, such as LED tile displays, for example. The plurality of display modules 202 can be assembled together to create one large screen, such as an LED video wall. The plurality of display modules 202 are configured to be suspended from one or more header bars 250 coupled to a top edge thereof. The header bars 250 can include any suitable number of attachment points 252 adapted to be connected to the brackets 26 of the support system 20 and allow the display modules 202 to hang from the truss section 12. More particularly, each attachment point 252 can be coupled to a respective hanging point 31 of the brackets 26. Therefore, it is appreciated that any configuration of header bars 250 (e.g., having any number of attachment points 252 at any location along a length thereof) can be connected to the truss assembly 10 since the brackets 26 can be slid along the sliding rail 21 to adjust their positions to conform to the location of the attachment points 252.

[044] In some embodiments, the truss assembly 10 is adapted to have the load 200 connected thereto, or at least a portion thereof, while in the mobile configuration. As seen in FIGS. 6 to 9, the wheel assembly 14 is mounted to the truss section 12 and the load 200 (e.g., the display modules 202) are mounted to the support system 20 between the frame members 75. It is thus noted that the header bars 250, and thereby a first row of display modules 202, can be connected and hung to the truss section 12 during transport (e.g., when in the mobile configuration). This configuration allows for pre-production rigging, such as in a production warehouse or rehearsal space, prior to leaving for the venue. This enables faster setup times once on site, including less on-site labor and faster setup of the display modules since the first row (which is traditionally the most time consuming, due in part to the header bar connection) is already installed.

[045] Still referring to FIGS. 6 to 9, in some embodiments, the truss assembly 10 can be provided with an anti-sway mechanism 100 configured to prevent the load from moving in undesired manners and/or impacting surrounding components of the truss assembly 10 (e.g., the truss section 12, the wheel assembly 14, etc.), such as when in the mobile configuration and during transport. In this embodiment, the anti-sway mechanism 100 includes a protection brace 102 connectable to at least one of the truss sections 12 and the wheel assembly 14. The protection brace 102 is shaped in a manner defining a retainment space 104 into which the load (e.g., the display module), or at least a portion thereof, can be inserted, such as during transport. More specifically, in this embodiment, the protection brace 102 includes a

Date Reçue/Date Received 2023-03-09

substantially U-shaped plate 103 defining the retainment space 104. It is noted that the U-shaped plate 103 is adapted to partially surround the display module, as seen in FIG. 8, thereby retaining the display module in the retainment space 104. As such, undesired motion (e.g., swaying) can be prevented, for instance, when transporting the truss assembly 10.

[046] The protection brace 102 can be connected to the wheel assembly 14, and more particularly, to the legs 76 of each frame member 75. In some embodiments, the anti-sway mechanism 100 includes lateral connectors 112 extending from the protection brace 102 and is adapted to be connected to at least one leg 76. In this embodiment, the anti-sway mechanism 100 includes a pair of lateral connectors 112 extending on opposite sides of the protection brace 102 in order to be connected to respective legs 76 of the wheel assembly 14. The protection brace 102 is illustratively positioned between the frame members 75 such that the lateral connectors 112 are connected to respective legs of the first and second frame members.

[047] In this embodiment, the protection brace 102 can be coupled to the load 200 to further secure the load 200 within the retainment space 104. The anti-sway mechanism 100 can include a locking adapter 106 can extend through the U-shape plate 103 in order to enable connection with the load 200 within the retainment space 104. The protection brace 102 may additionally include padding (not shown) on an inner surface thereof in the retainment space 104 to absorb impacts or provide additional protection to the display modules 202. In some embodiments, the anti-sway mechanism 100 includes a pair of protection braces 102 connected to respective ends of the frame between the first and second frame members, thereby preventing movement of the load at two separate locations. However, it is appreciated that other configurations of the anti-sway mechanism 100 are possible, such as having protection braces 102 provided at any other suitable location, for example.

[048] Although the anti-sway mechanism 100 has been illustrated with respect to the truss assembly 10 as described herein, it should be understood that it may also be used with other trusses having any other suitable configuration for preventing impact damage to a load mounted onto the truss assembly 10. The truss assembly 10 may additionally be stored and transported with the anti-sway mechanism 100. The truss assembly 10 may, for example, be secured using a harness inside a truck or train carriage and/or locks may be included with the wheels to prevent movement of the truss assembly 10 during transport.

[049] Referring now to FIGS. 9, 11 and 12, the truss section 12 can be a modular truss section, thereby enabling a plurality of truss sections to be connected together such that a

Date Reçue/Date Received 2023-03-09

large screen can be formed using the display modules 202 coupled to each truss section 12. The truss sections 12 are connectable to one another in an end-to-end manner, as is well known in the art. The truss sections 12 can be connected together along a longitudinal axis so as to form a generally straight support structure. Alternatively, the truss sections 12 can be coupled to one another at an angle to enable to creation of different structures, such as arches, for example.

[050] Referring now to FIGS. 13 to 15, there is shown a truss assembly 110 in accordance with another embodiment. The truss assembly 110 comprises a truss section 112 and a wheel assembly 114 removably connected to the truss section 112 and adapted to facilitate displacement of the truss section 112. The truss assembly 110 comprises a rail 121 having a pair of tubes 122. The truss assembly 110 is substantially similar to the truss assembly described above, but for the pair of tubes 122 of the rail 121 are fixedly secured together, such as via welding. The pair of tubes 122 are welded together using a plurality of central welding members 123 shaped and sized to space the tubes 122 from one another, thereby defining a channel 124 therebetween.

[051] In previously described embodiments, the pair of tubes were connected together by removable bolts. As such, in order to insert and/or remove the brackets from within the channel defined between the pair of tubes, the bolts first had to be removed, the brackets could then be inserted or removed, and the bolts reconnected. In the present embodiment, the pair of tubes 122 are secured (e.g., welded) together. Therefore, to enable mounting and removing the brackets 130, a portion of the bracket, such as the top segment 132 can be removably connected to another portion of the bracket 130, such as the bottom segment 134, for example. In addition to, or as an alternative to the stop pin described in relation to the embodiment shown in FIGS. 5A to 5C, the bracket can include a connection bolt 140 configured to engage the threaded bolt 141 extending through the bracket 130. The threaded bolt can include a recessed channel (similar to the recessed slot 46 described above) for receiving the connection bolt 140.

[052] It is thus understood that removing the connection bolt 140 enables removal of the threaded bolt 141 (e.g., from below), thereby disconnecting the top segment and the bottom segment from one another. Once disconnected, the top segment 132 can be removed from above the pair of tubes, and the bottom segment (and any parts still coupled thereto) can be removed from below the pair of tubes. This connection method enables connecting and

Date Reçue/Date Received 2023-03-09

removing the brackets 130 from the sliding rail (e.g., from the pair of tubes) generally anywhere along its length.

[053] In this embodiment, the truss assembly 112 also includes an anti-sway mechanism 150. The anti-sway mechanism 150, similar to the anti-sway mechanism described above, is configured to prevent the load from moving in undesired manners and/or impacting surrounding components of the truss assembly 110. The anti-sway mechanism 150 comprises a protection brace 152 connectable to at least one of the truss sections 112 and the wheel assembly 114. The protection brace 152 defines a retainment space 154 which is configured to extend at least partially along a height of legs 126 of the truss assembly 110 and to receive the load 200, such as the display modules 202. In the illustrated embodiment, the protection brace 152 has a generally vertical section 156 adapted to extend along a side of the load 200, and a transverse section 158 extending from a bottom end of the vertical section 156. In this embodiment, the combination of the vertical section and the transverse section 158 of the protection brace 152 defines the retainment space 154, which can be U-shaped for partially surrounding and retaining the load 200 therein. In some embodiments, the retainment space 154 is configured to snugly receive the load 200 therein and may further comprise padding (not shown) on an inner surface thereof to absorb impacts or provide additional protection to the load 200.

[054] The vertical section 156 of the protection brace 152 further comprises lateral connectors 160 extending on opposite sides of the protection brace 152 in order to connect to respective legs 126 of the wheel assembly 114. The lateral connectors 160 are therefore adapted to hold the load 200 in place for preventing swaying motion, for example, during transport, and/or for preventing the load 200 from contacting/impacting the legs and being damaged. It will be understood that, although the truss assembly 110 is shown in the mobile configuration in FIGS. 13 to 15, it may also be placed in the stationary configuration, similar to the truss assembly described above.

[055] It will be appreciated from the foregoing disclosure that there is provided a truss assembly having a support system having brackets enabling horizontal and vertical adjustments of the hanging point. As such, the support system can be adjusted to various different types of loads having different types of attachment points. These adjustments of the support system can prevent misalignment of video tiles, and can facilitate installation of multiple modular loads. It is also appreciated that the sliding rail is centrally positioned between and connected to each chord of the truss section, thereby providing a generally

Date Reçue/Date Received 2023-03-09

uniform load distribution across the truss assembly when supporting a load. In addition, an area below the sliding rail remains generally unobstructed to facilitate access to the brackets, among others, which further facilitates installation. Moreover, a first row of display modules can be pre-rigged, i.e., connected to the truss section before having the truss section transported on-site, even further facilitating installation and reducing setup time. The provided anti-sway mechanism protects the pre-rigged display modules, for example, as the truss assembly is transported on-site.

[056] The present disclosure may be embodied in other specific forms without departing from the subject matter of the claims. The described example embodiments are to be considered in all respects as being only illustrative and not restrictive.

[057] In the present disclosure, an embodiment is an example or implementation of the truss assembly. The various appearances of "one embodiment," "an embodiment" or "some embodiments" do not necessarily all refer to the same embodiments. Although various features may be described in the context of a single embodiment, the features may also be provided separately or in any suitable combination. Conversely, although the truss assembly may be described herein in the context of separate embodiments for clarity, it may also be implemented in a single embodiment. Reference in the specification to "some embodiments", "an embodiment", "one embodiment", or "other embodiments", means that a particular feature, structure, or characteristic described in connection with the embodiments is included in at least some embodiments, but not necessarily in all embodiments.

[058] As used herein, the terms "coupled", "coupling", "attached", "connected" or variants thereof as used herein can have several different meanings depending in the context in which these terms are used. For example, the terms coupled, coupling, connected or attached can have a mechanical connotation. For example, as used herein, the terms coupled, coupling or attached can indicate that two elements or devices are directly connected to one another or connected to one another through one or more intermediate elements or devices via a mechanical element depending on the particular context.

[059] Similarly, positional descriptions such as "top", "bottom", "above", "under", "below", "left", "right", "front", "rear", "parallel", "perpendicular", "transverse", "inner", "outer", "internal", "external", and the like should, unless otherwise indicated, be taken in the context of the figures and should not be considered limiting.

Date Reçue/Date Received 2023-03-09

[060] In the above description, the same numerical references refer to similar elements. Furthermore, for the sake of simplicity and clarity, namely so as to not unduly burden the figures with several references numbers, not all figures contain references to all the components and features, and references to some components and features may be found in only one figure, and components and features of the present disclosure which are illustrated in other figures can be easily inferred therefrom. The implementations, geometrical configurations, materials mentioned and/or dimensions shown in the figures are optional, and are given for exemplification purposes only.

[061] In addition, although the optional configurations as illustrated in the accompanying drawings comprises various components and although the optional configurations of the truss assembly as shown may consist of certain geometrical configurations as explained and illustrated herein, not all of these components and geometries are essential and thus should not be taken in their restrictive sense, i.e. should not be taken as to limit the scope of the present disclosure. It is to be understood that other suitable components and cooperations thereinbetween, as well as other suitable geometrical configurations may be used for the implementation and use of the truss assembly, and corresponding parts, as briefly explained and as can be easily inferred herefrom, without departing from the scope of the disclosure.

Date Reçue/Date Received 2023-03-09

CLAIMS

1. A truss assembly comprising:

   a truss section having a plurality of chords extending longitudinally and defining a volume therebetween, the truss section further including a sliding rail positioned within the volume and connected to the plurality of chords; and

   at least one bracket having a first portion slidably coupled to the sliding rail and a second portion connected to the first portion and defining a hanging point adapted to support a load.

2. The truss assembly of claim 1, wherein the plurality of chords comprises a pair of top chords and a pair of bottom chords, the truss assembly further comprising:

   chord web members extending between and connecting the bottom chords to the top chords and extending between and connecting the top chords to one another; and

   rail web members extending between and connecting the sliding rail to the plurality of chords, where a general area below the sliding rail is free of chord and rail web members.

3. The truss assembly of claim 2, wherein the sliding rail comprises a pair of tubes spaced from one another and defining a channel therebetween, the first portion of the at least one bracket being adapted to slide along the pair of tubes within the channel.

4. The truss assembly of claim 3, wherein the first portion of the at least one bracket has a generally "I" shape and is adapted to extend between, above and below the pair of tubes.

5. The truss assembly of claim 3 or 4, wherein the first portion of the at least one bracket comprises a central segment adapted to be positioned between the pair of tubes and a top segment extending from the central segment and adapted to engage a top surface of the pair of tubes.

6. The truss assembly of any one of claims 3 to 5, wherein the pair of tubes are connected to one another via bolts extending through the channel at a plurality of connection points along a length of the pair of tubes, and wherein at least some of the bolts define

Date Reçue/Date Received 2023-03-09

respective bracket stops adapted to limit movement of the at least one bracket along the channel.

7. The truss assembly of any one of claims 3 to 5, wherein the pair of tubes are secured to one another via connection members extending across the channel at a plurality of connection points along a length of the pair of tubes, and wherein at least some of the connection members define respective bracket stops adapted to limit movement of the at least one bracket along the channel.

8. The truss assembly of claim 7, wherein the connection members are welded to the pair of tubes.

9. The truss assembly of any one of claims 1 to 8, wherein the first portion comprises a threaded aperture and the second portion comprises a threaded rod operatively coupled to the threaded aperture and adapted to enable adjustment of a position of the hanging point relative to the first portion, and wherein the threaded aperture extends through the central segment and top segment.

10. The truss assembly of claim 9, wherein the second portion is adapted to be positioned below the sliding rail, and wherein the threaded rod extends generally perpendicularly relative to the sliding rail.

11. The truss assembly of claim 9 or 10, wherein the first portion further comprises a bottom segment having a threaded hole operatively connectable to the threaded rod, the bottom segment being adapted to engage the sliding rail and the central segment from below to fasten the at least one bracket in place along the sliding rail.

12. The truss assembly of any one of claims 9 to 11, wherein the threaded rod comprises a slot defined along a section thereof, and wherein the first portion of the at least one bracket comprises a stop pin adapted to engage the slot when the threaded rod is engaged with the threaded aperture, the stop pin being configured to engage the slot to at least partially prevent movement of the threaded rod along the threaded aperture.

13. The truss assembly of any one of claims 1 to 12, further comprising a wheel assembly having a frame connectable to the truss section and wheels coupled to the frame, the wheel assembly being operable between a mobile configuration, where the frame and the wheels extend below the truss section to enable displacement thereof, and a stationary configuration, where the frame and the wheels extend above the truss section.

Date Reçue/Date Received 2023-03-09

14. The truss assembly of claim 13, further comprising an anti-sway mechanism connectable to the frame and configured to prevent the load from swaying and impacting the wheel assembly when in the mobile configuration.

15. The truss assembly of claim 14, wherein the frame comprises legs removably connectable to opposite ends of the truss section, each leg having one of the wheels at a bottom end thereof, and wherein the frame comprises a first frame member and a second frame member provided on opposite sides across a width of the truss section, the first and second frame members each comprising a pair of legs at opposite ends thereof, and wherein the legs are connected to respective corners of the truss section.

16. The truss assembly of claim 15, wherein the anti-sway mechanism comprises a protection brace connected to the legs of the first and second frame members and being positioned between the first frame member and the second frame member, the protection brace being shaped and adapted to define a retainment space configured to receive part of the load hanging from the at least one bracket.

17. The truss assembly of claim 16, wherein the anti-sway mechanism comprises a pair of protection braces connected to respective ends of the frame between the first and second frame members.

18. The truss assembly of any one of claims 1 to 17, wherein the truss section is a modular truss section adapted to be connected to another modular truss section in an end-to-end manner.

19. A truss assembly comprising:

    a truss support structure;

    a bracket coupled to the truss support structure and adapted to support a load;

    a wheel assembly comprising a frame connectable to the truss support structure and wheels coupled to the frame, the wheel assembly being operable between a mobile configuration, where the frame and the wheels extend below the truss support structure to enable displacement thereof, and a stationary configuration, where the frame and the wheels extend above the truss support structure or are disconnected from the truss support structure; and

Date Reçue/Date Received 2023-03-09

an anti-sway mechanism connectable to the frame and configured to prevent the load from impacting the wheel assembly and the truss support structure when in the mobile configuration.

20. A truss assembly having a truss support structure, comprising:

a sliding rail positioned within and extending along the truss support structure; and

at least one bracket slidably coupled to the sliding rail and defining a hanging point adapted to support a load.

Date Reçue/Date Received 2023-03-09

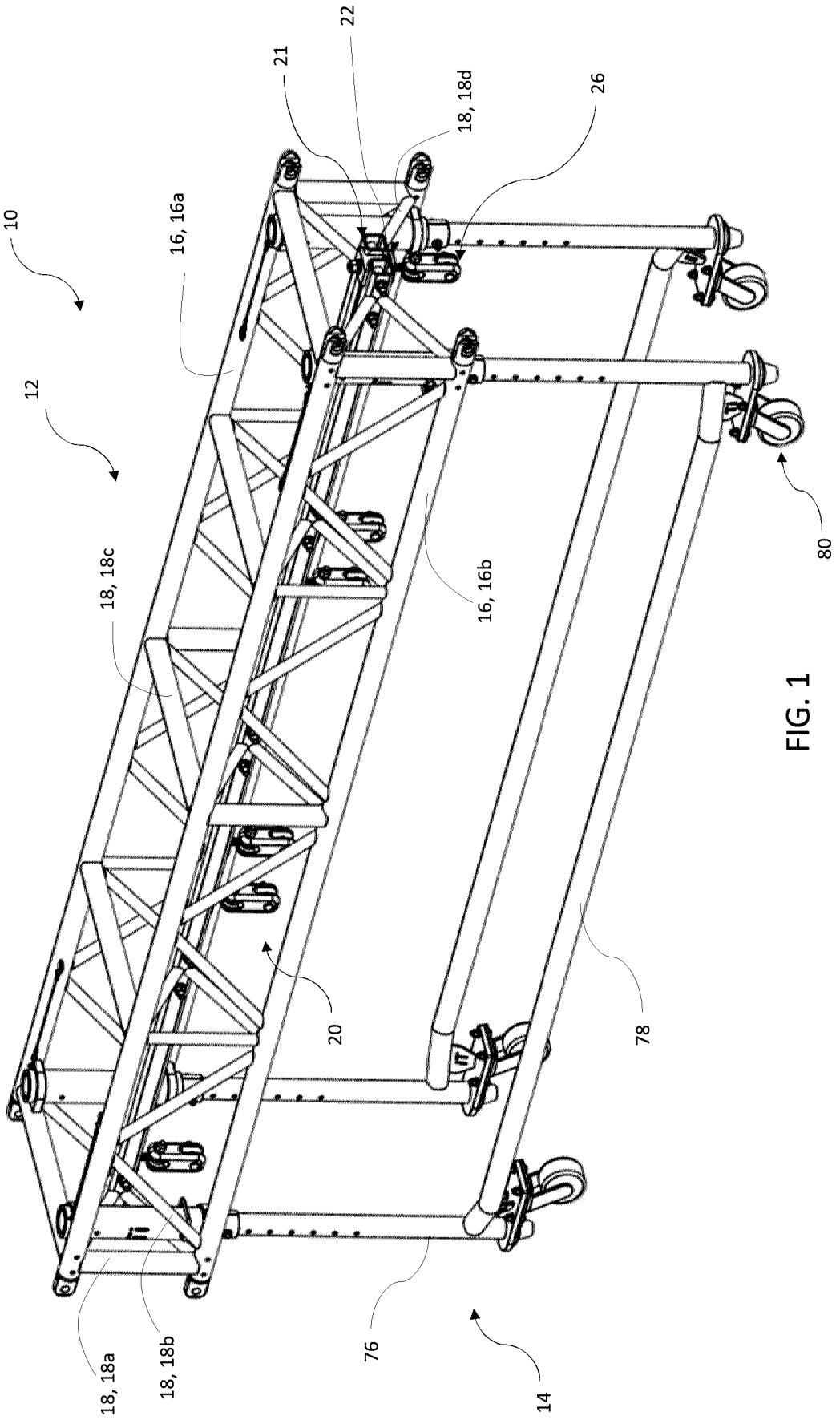
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FIG. 1

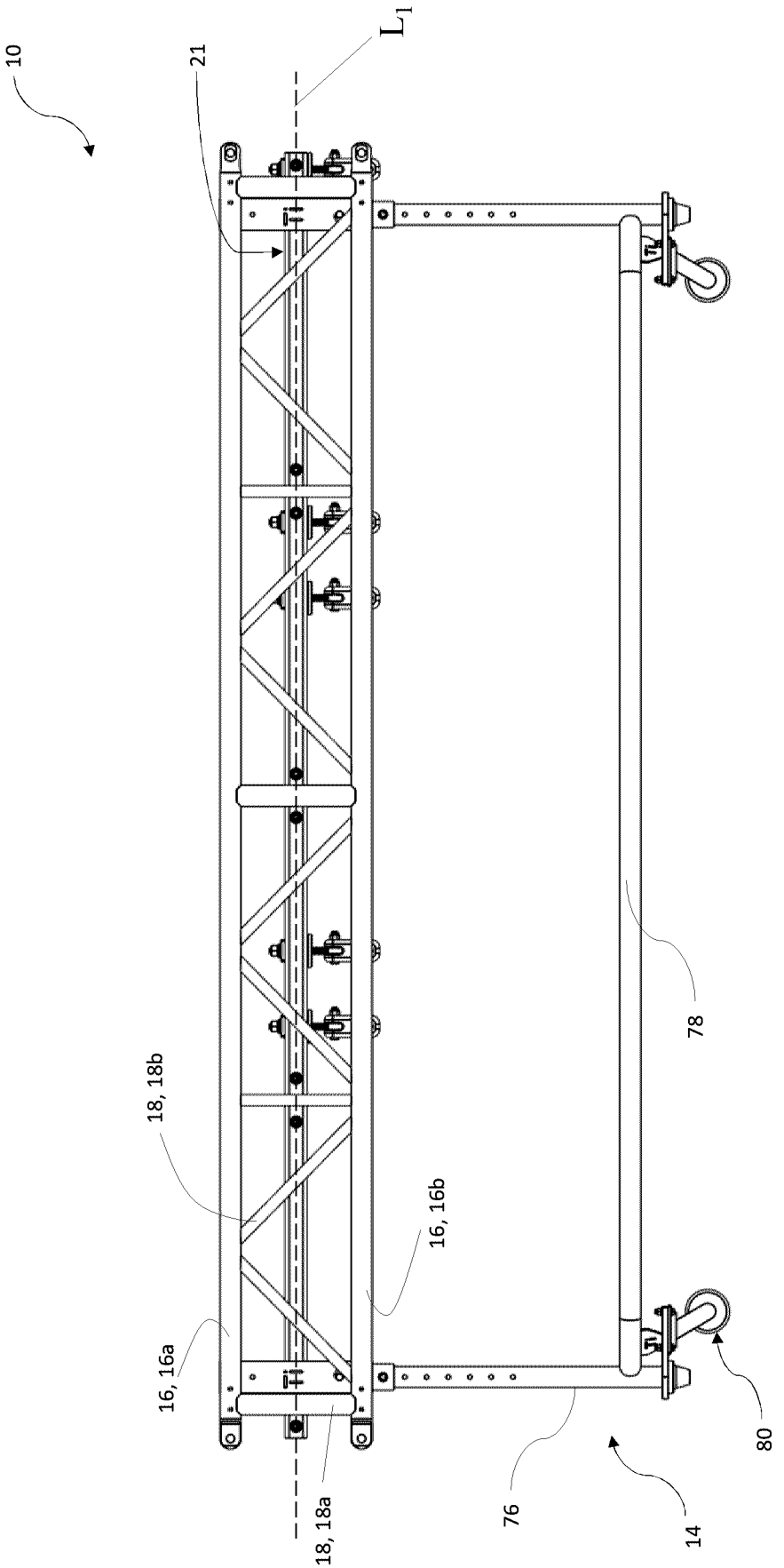


FIG. 2

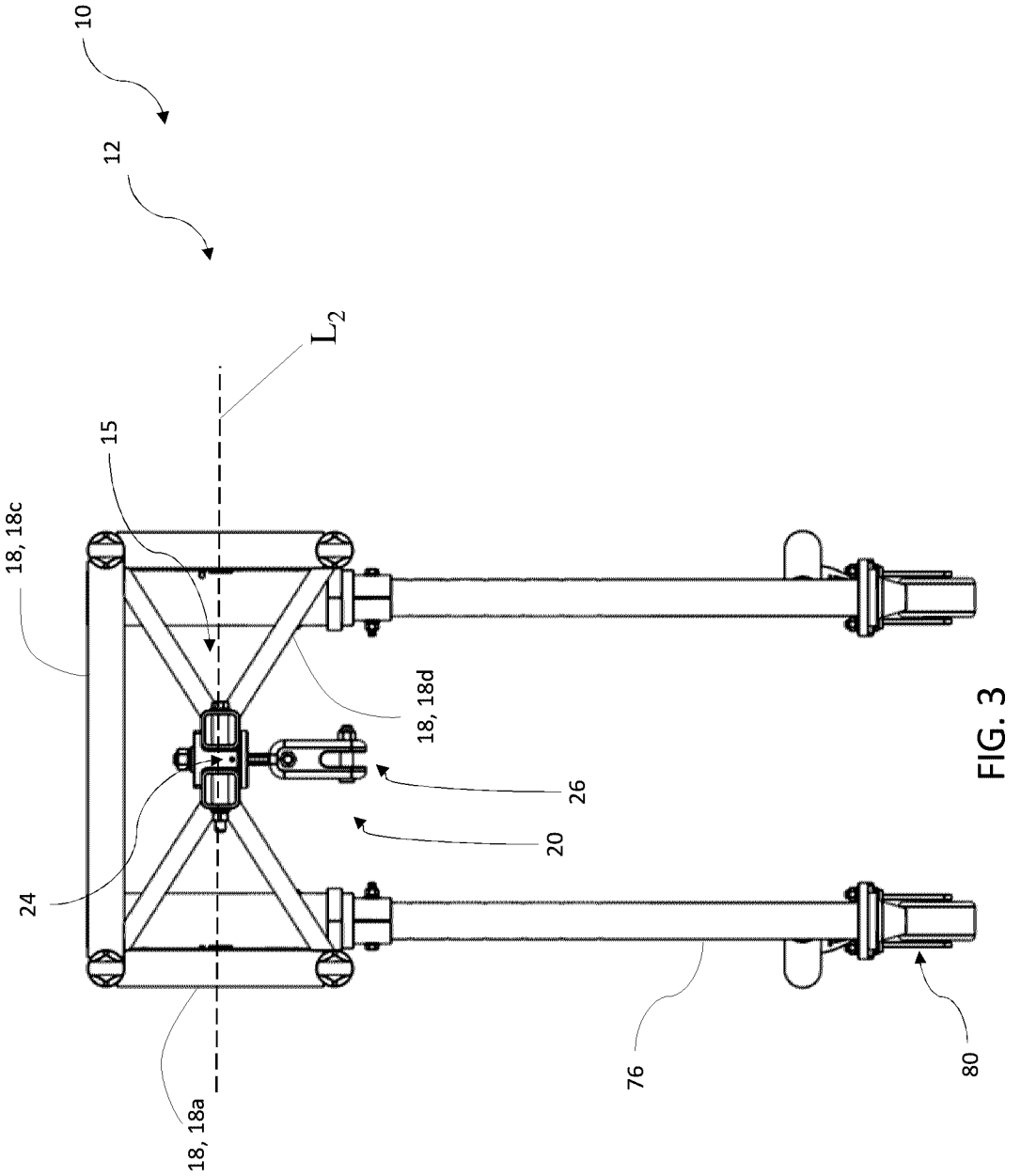


FIG. 3

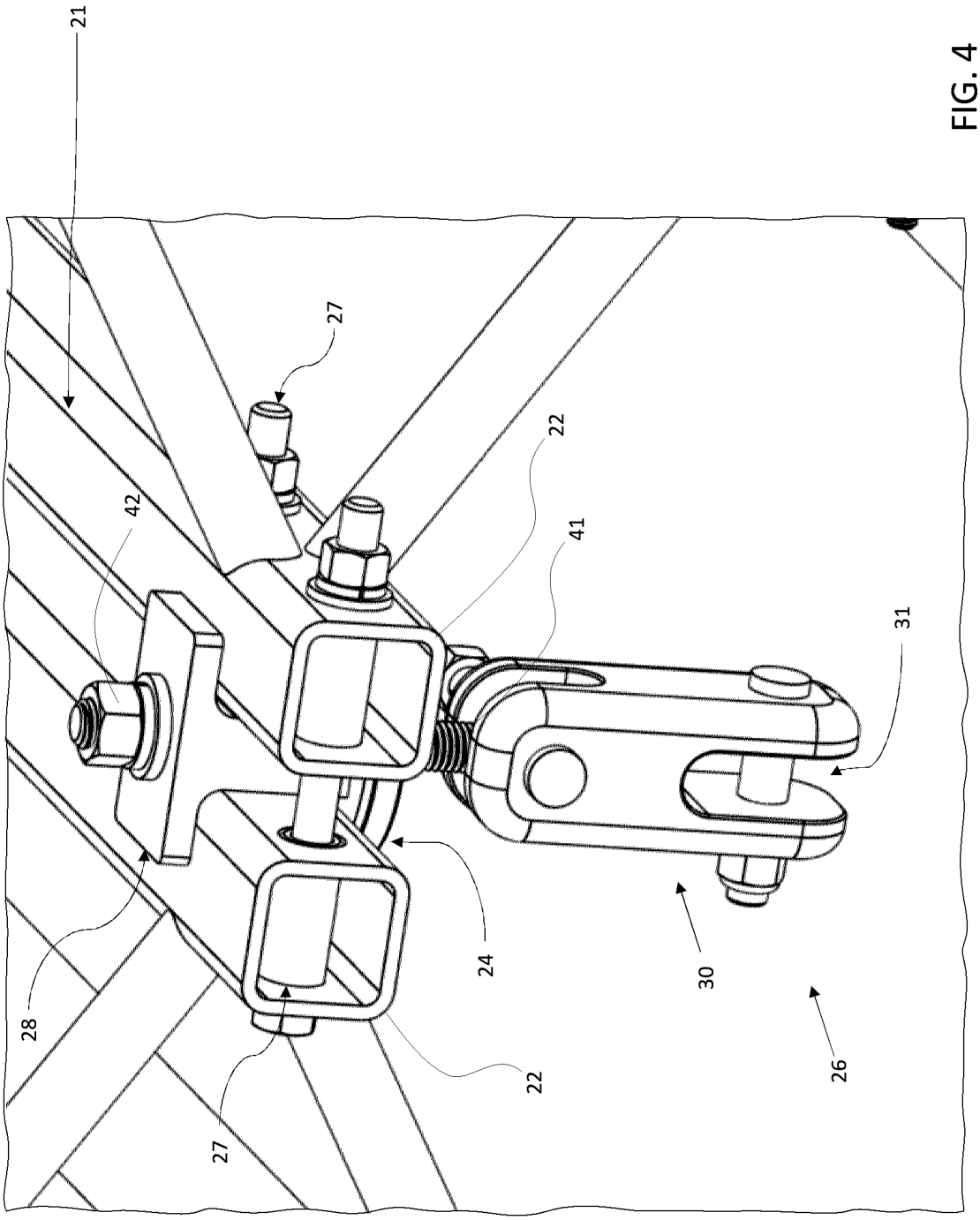


FIG. 4

Date Reçue/Date Received 2023-03-09

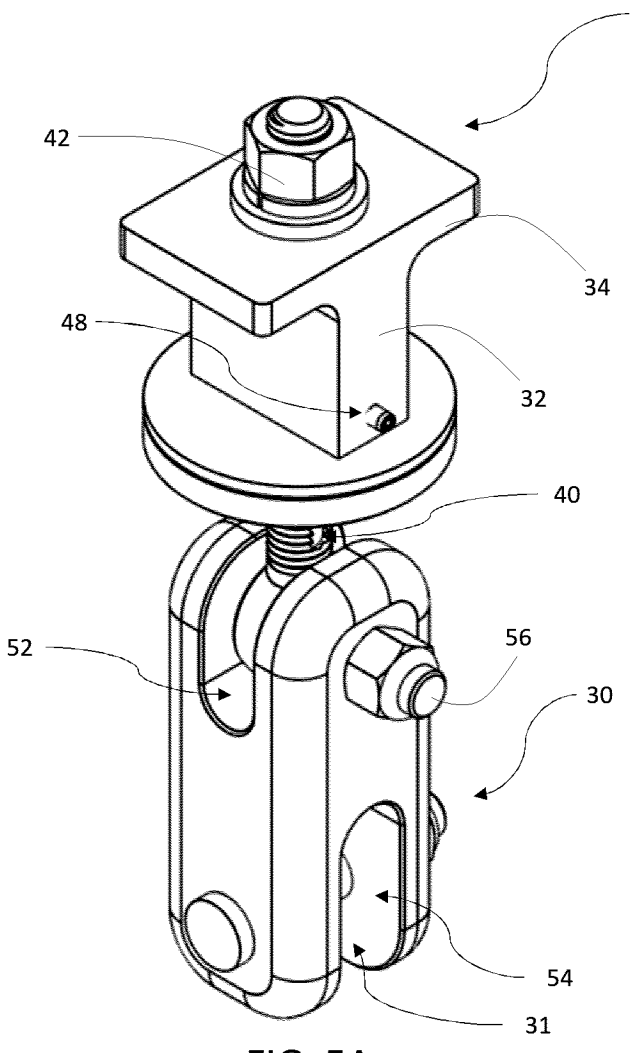


FIG. 5A

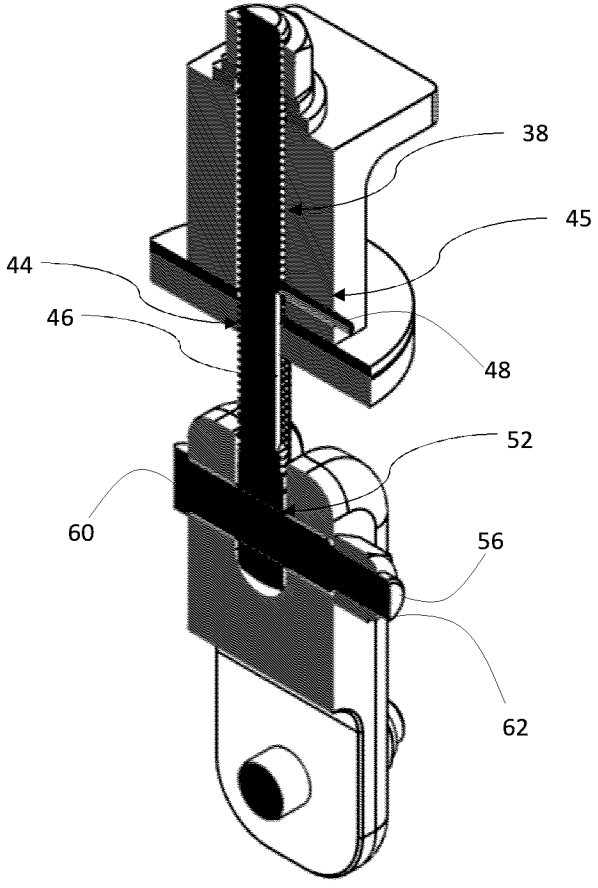


FIG. 5B

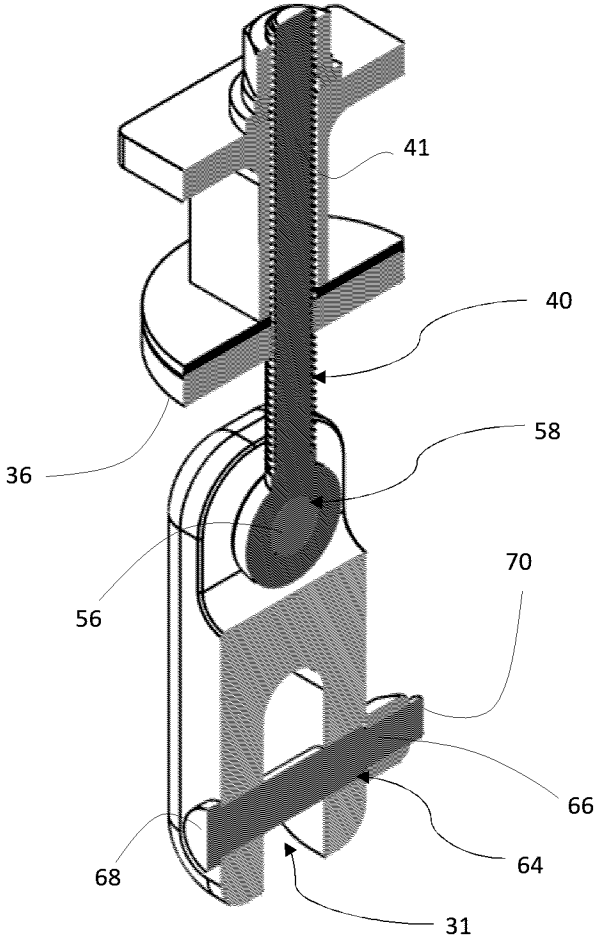


FIG. 5C

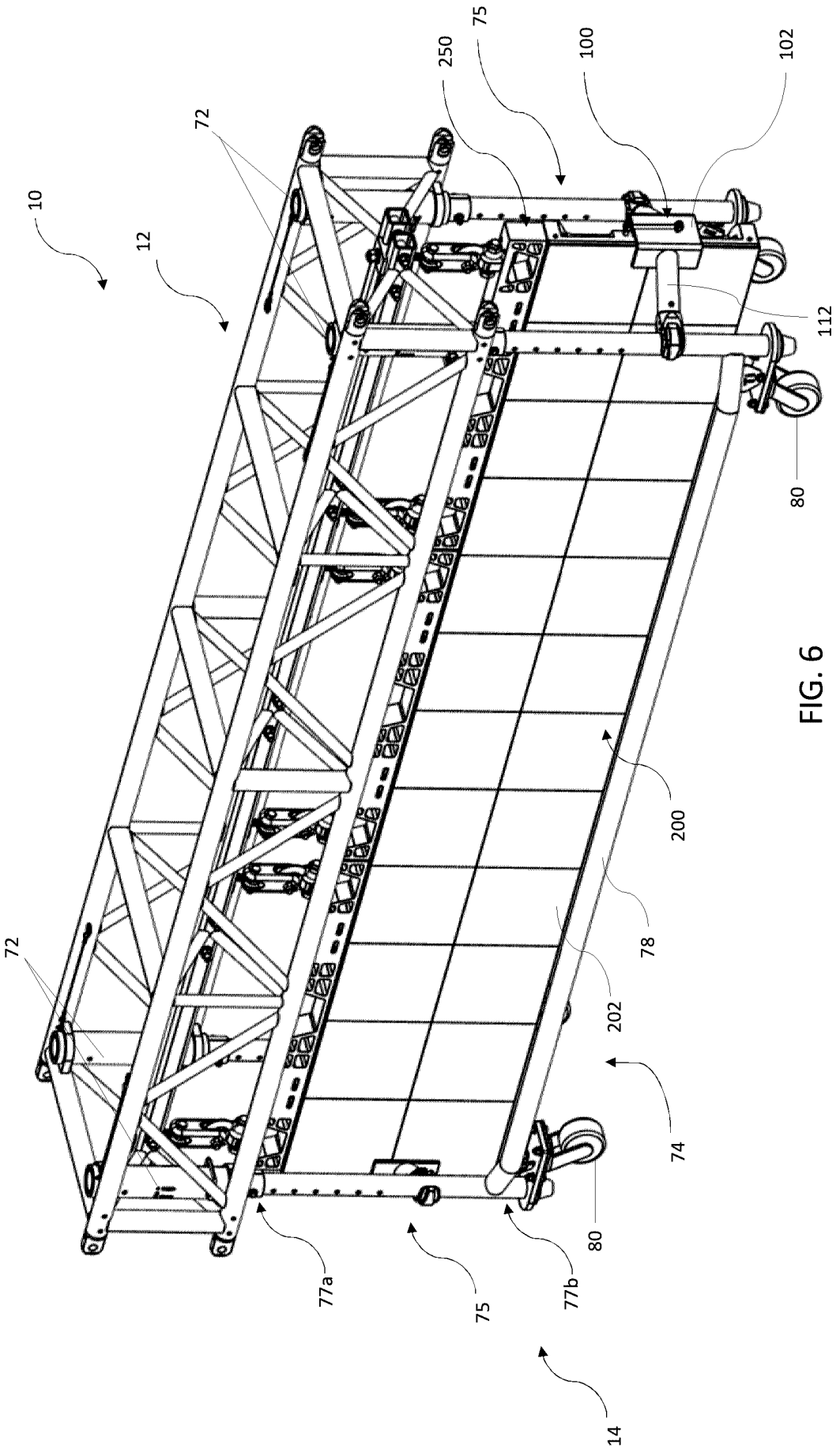


FIG. 6

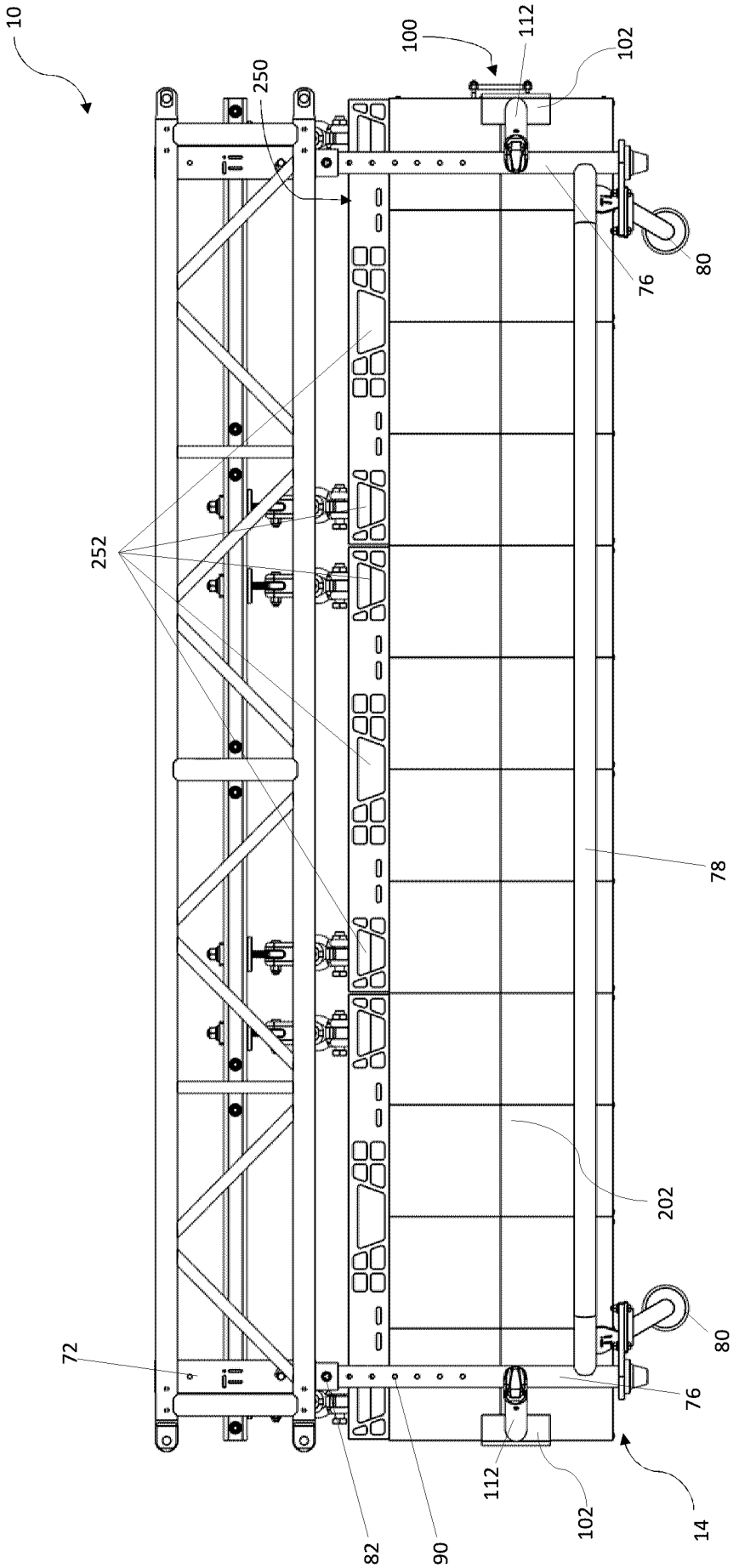


FIG. 7

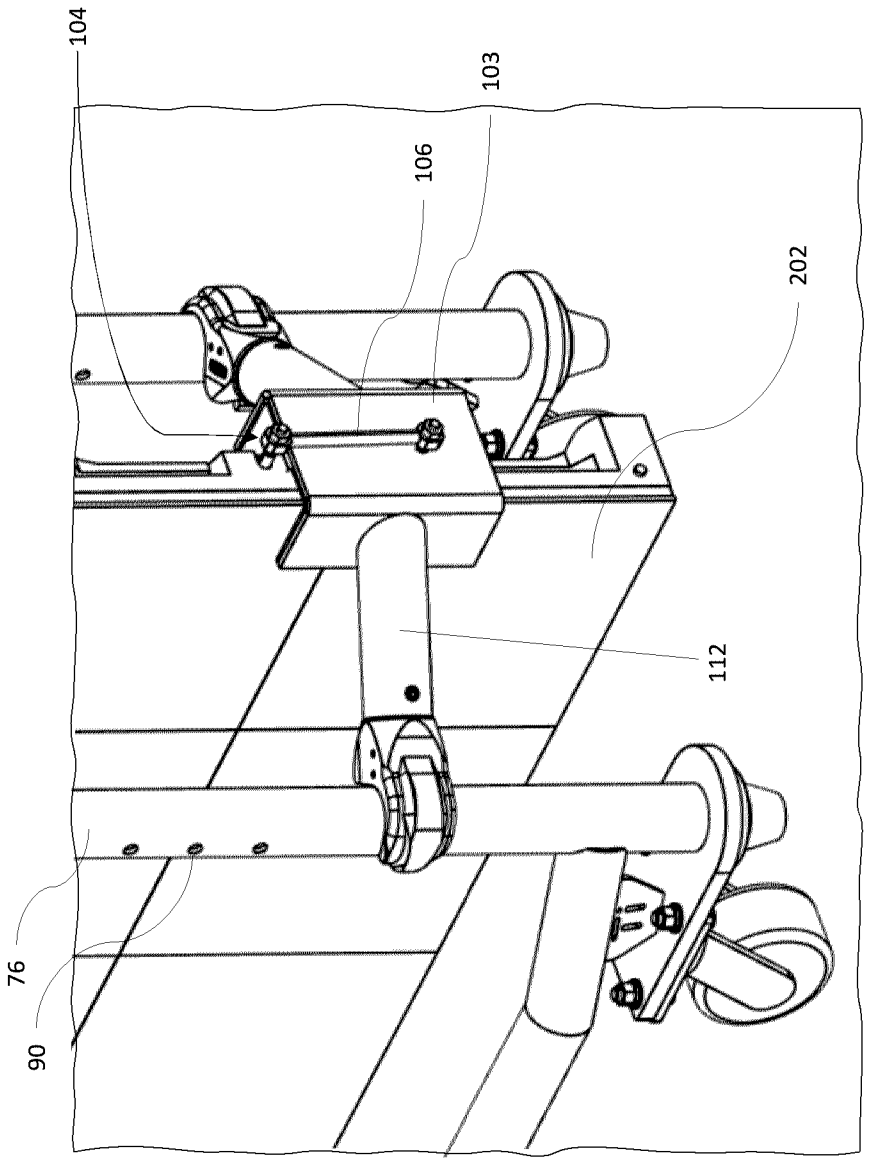


FIG. 8

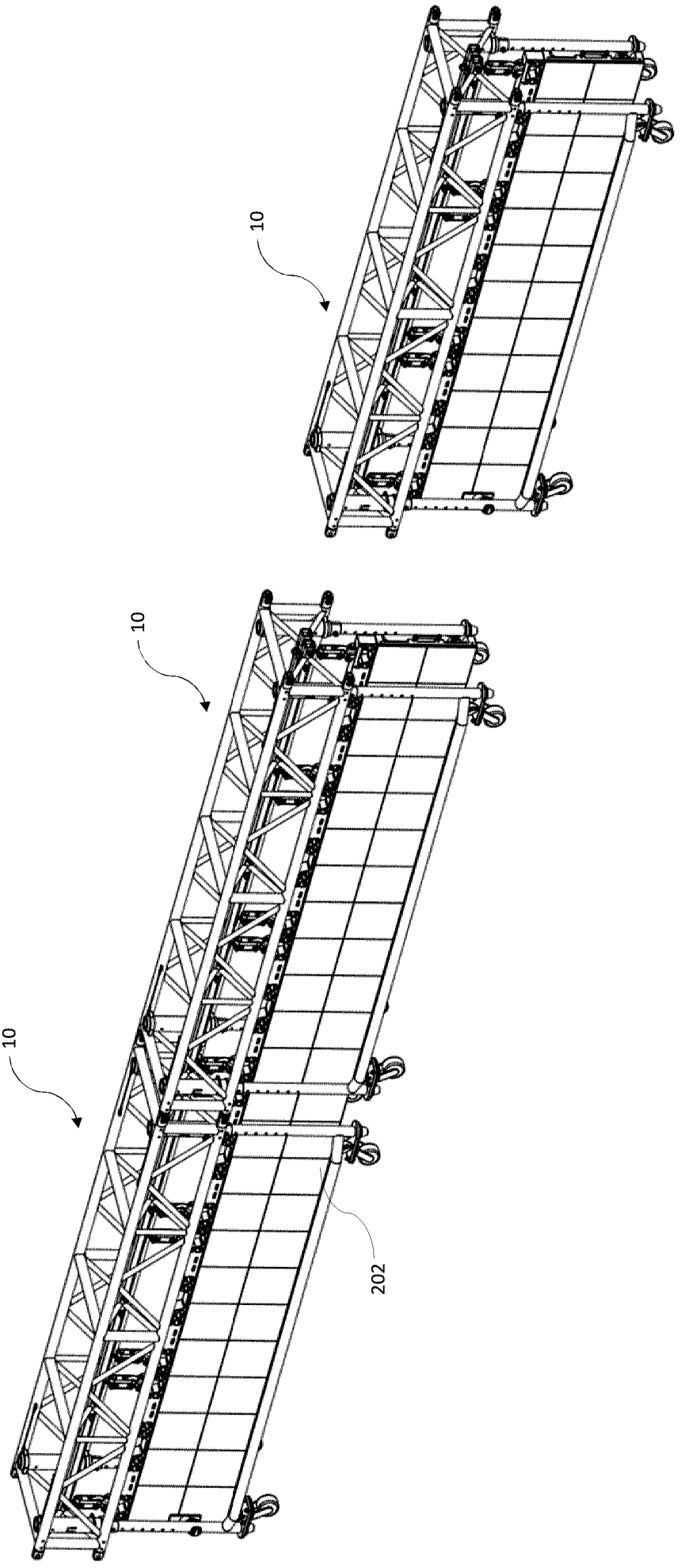


FIG. 9

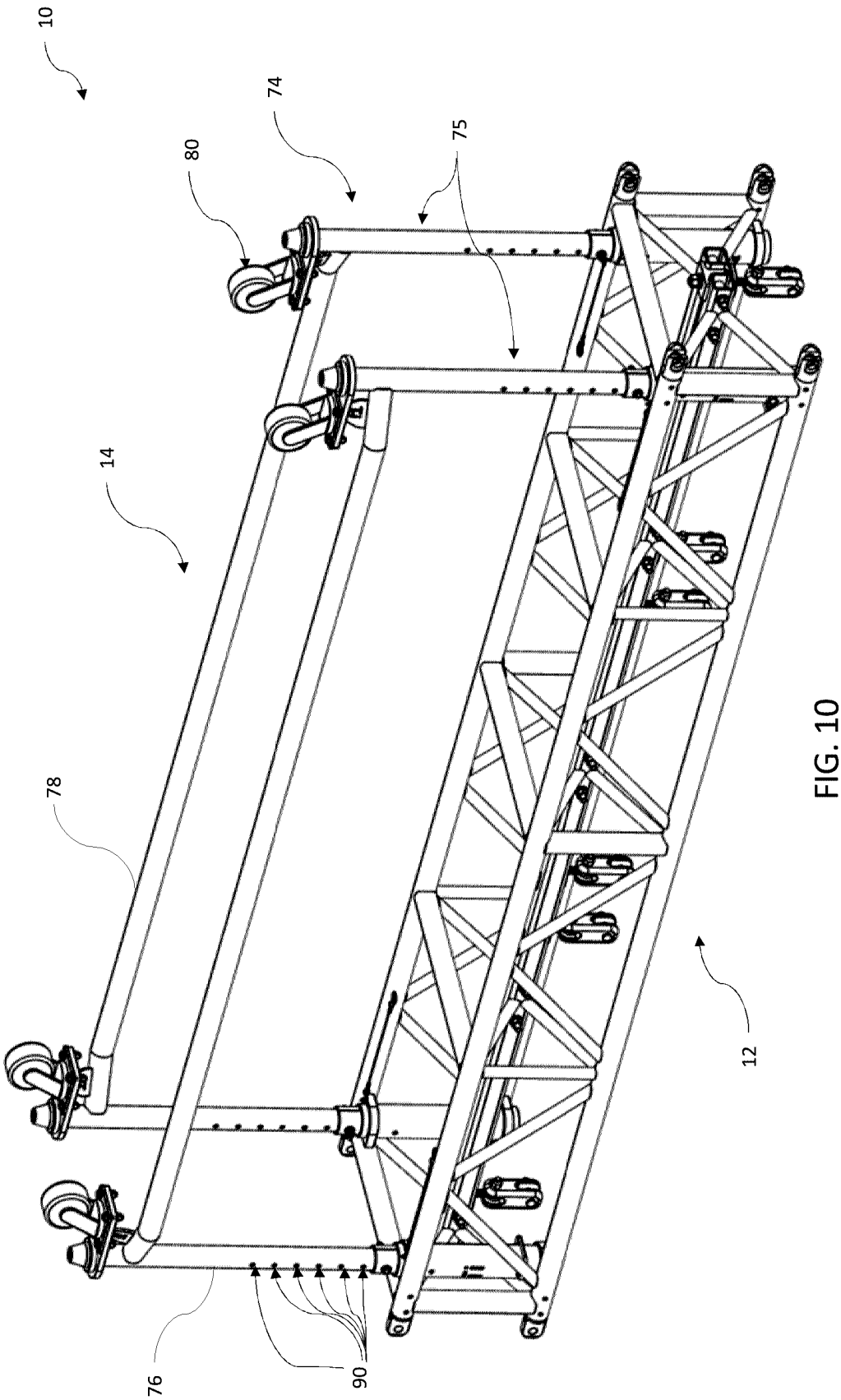


FIG. 10

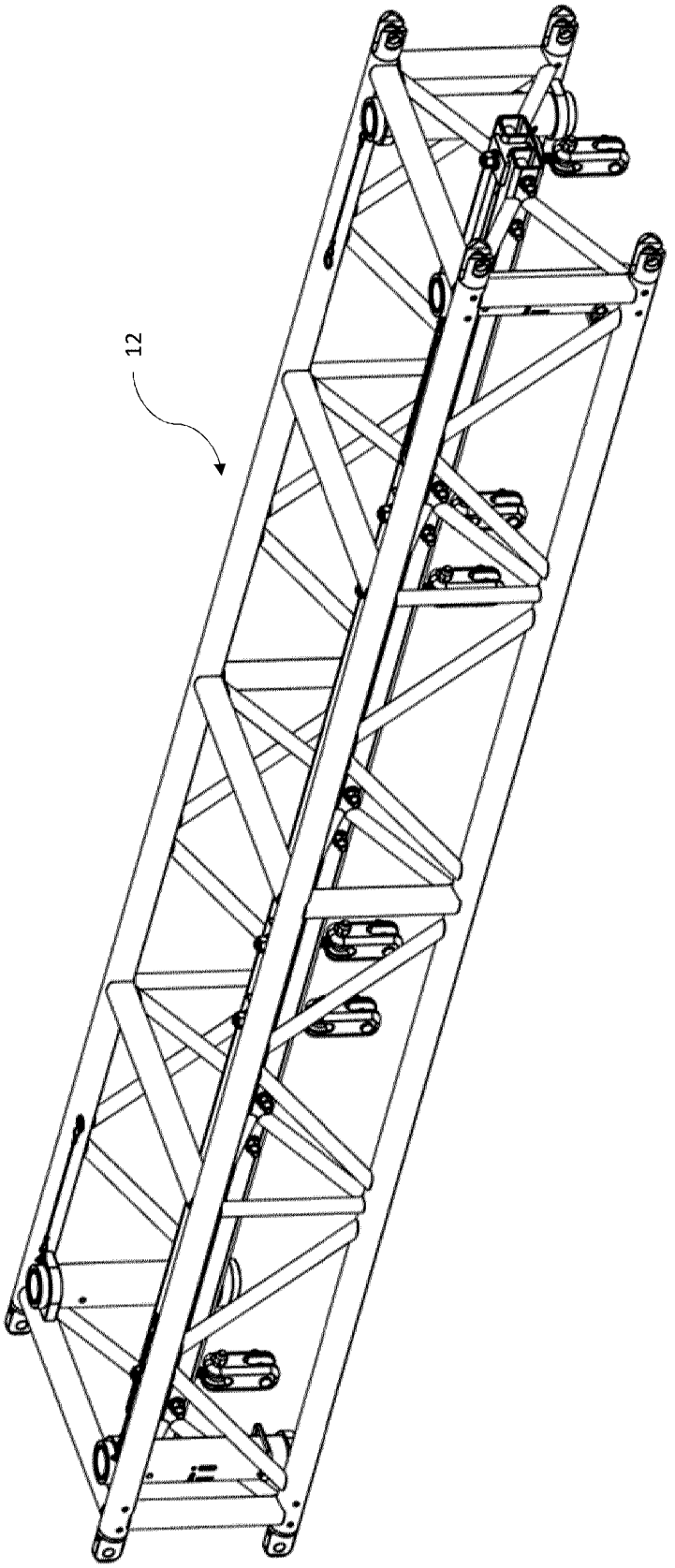


FIG. 11

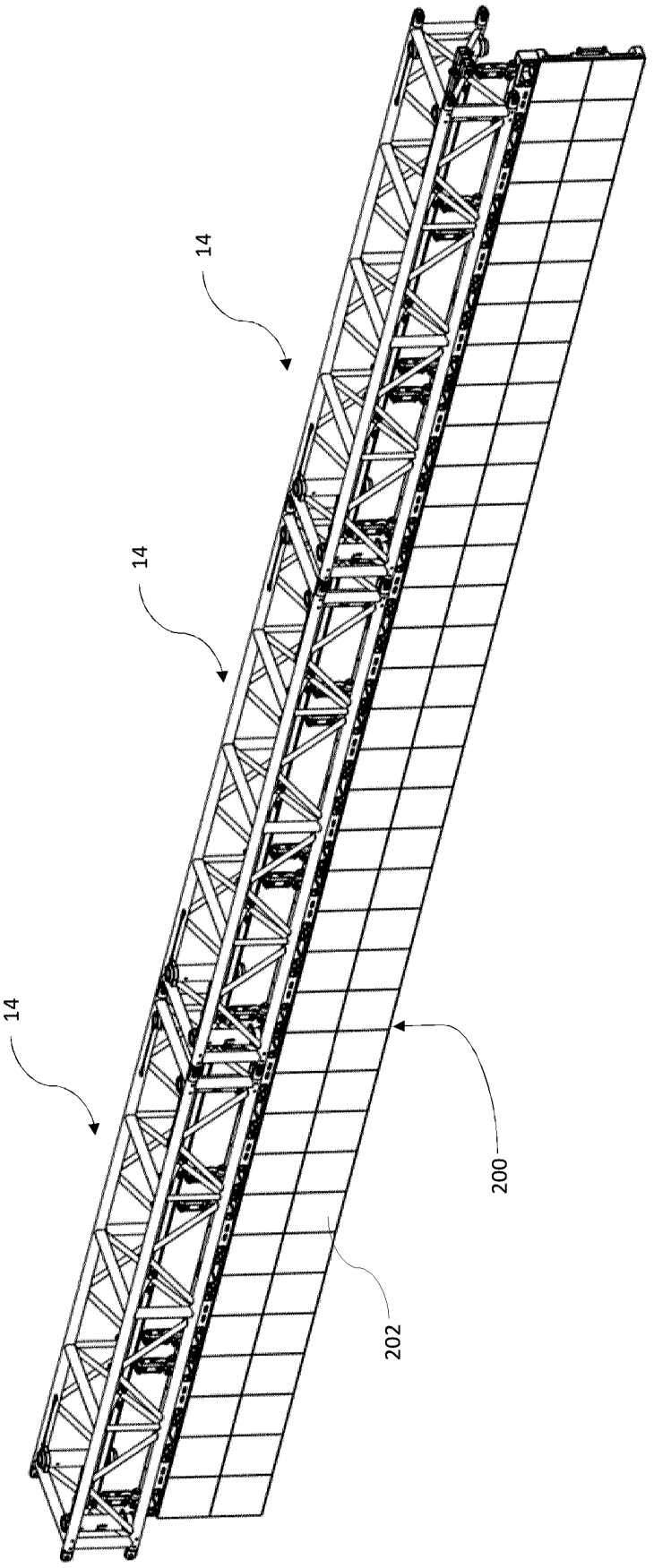


FIG. 12

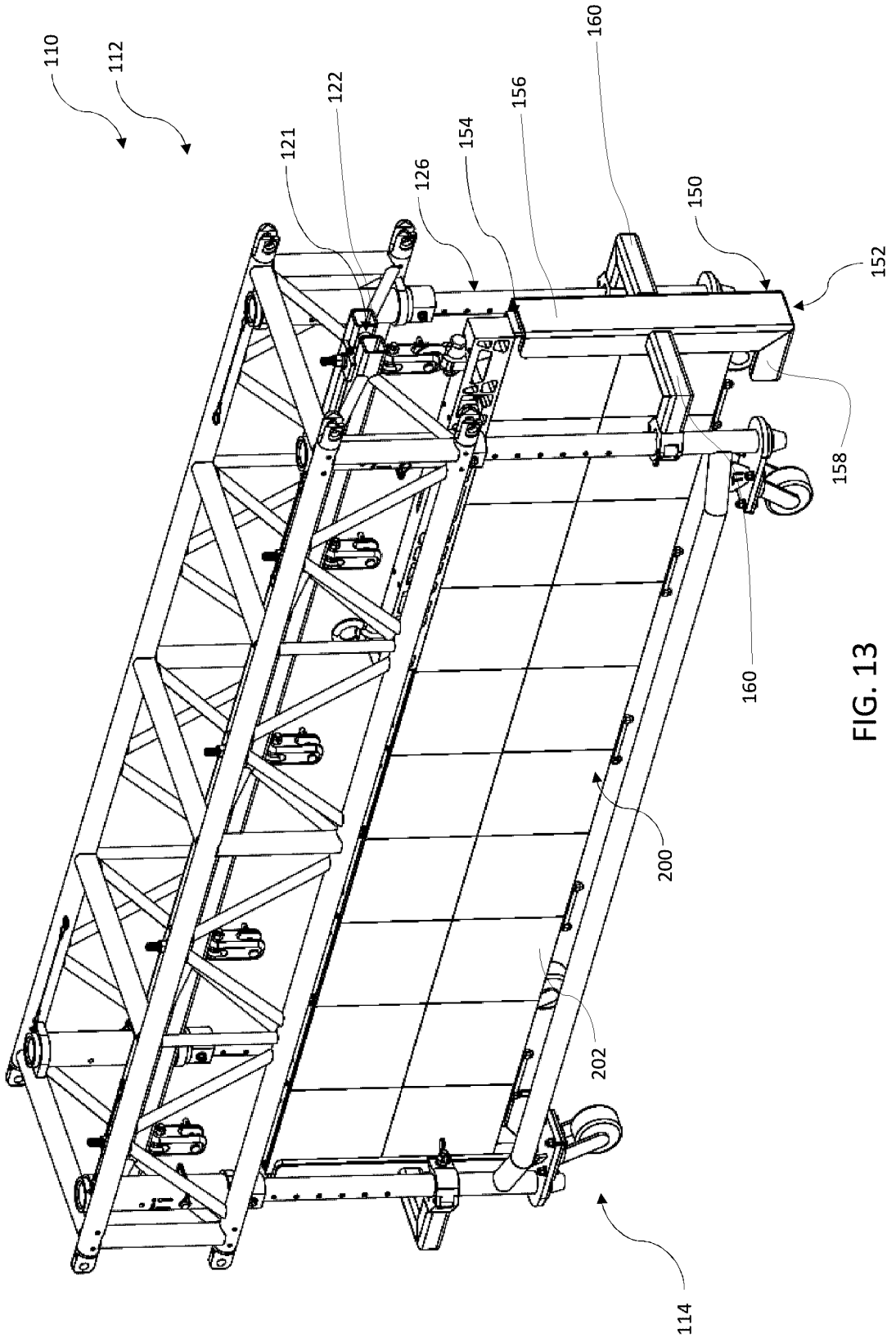


FIG. 13

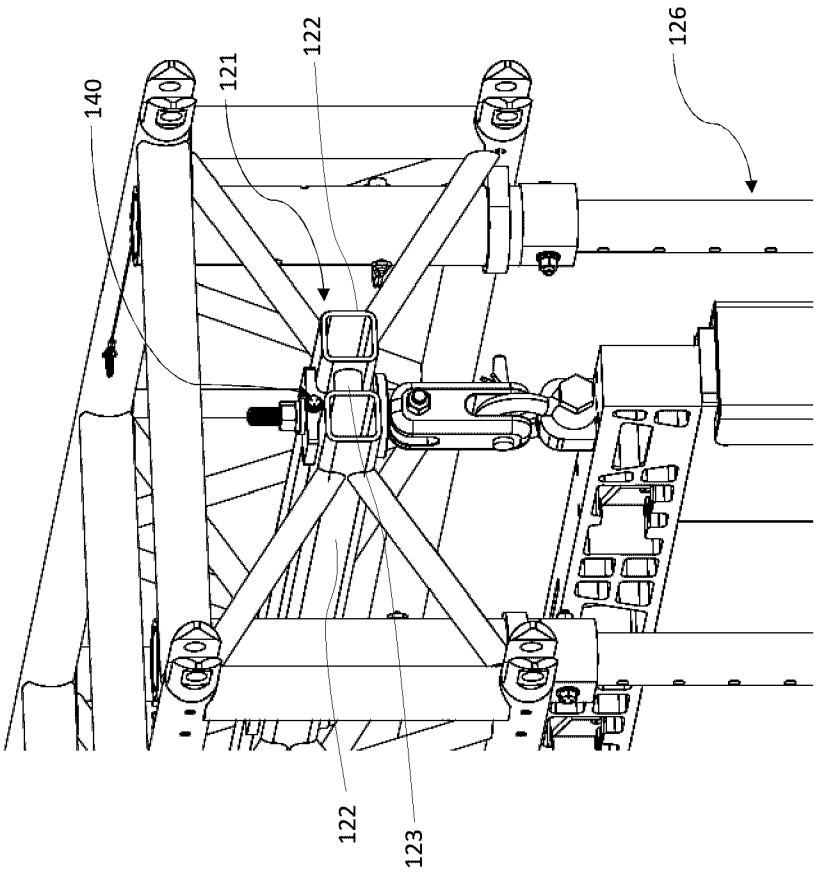


FIG. 14

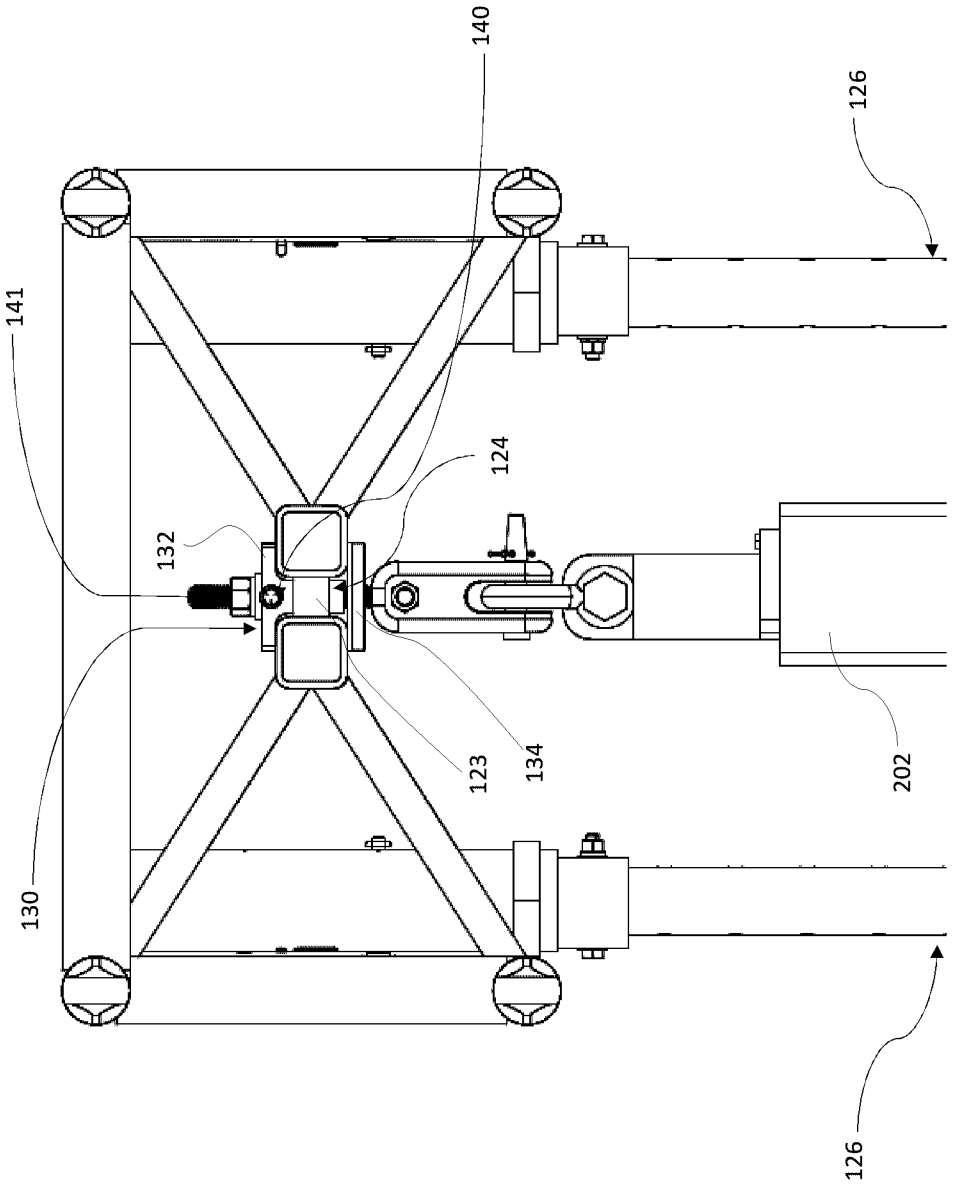
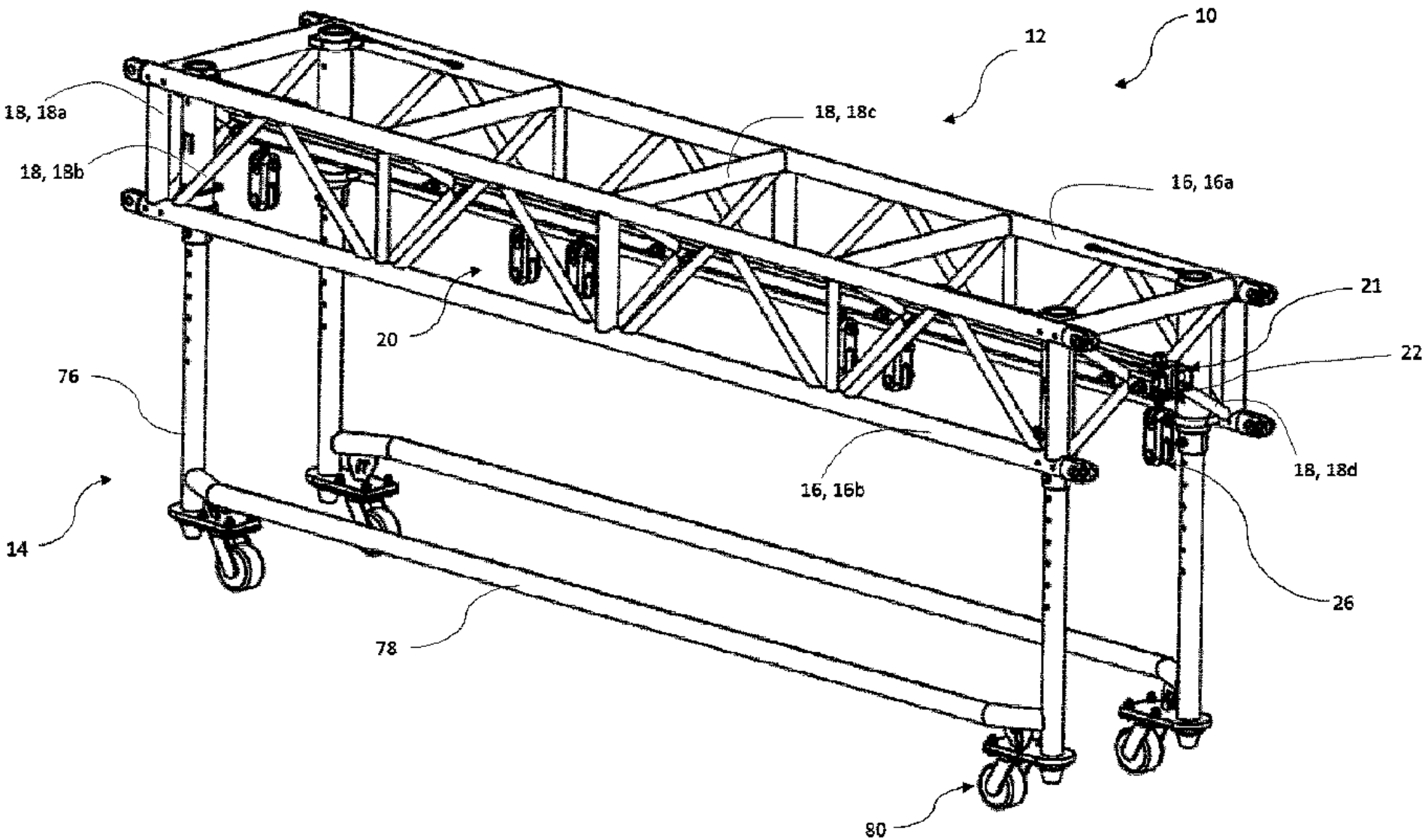


FIG. 15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