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(54) **WALL-MOUNTED SYSTEM FOR SELECTIVELY POSITIONING OBJECTS**

WANDMONTIERTES SYSTEM ZUR SELEKTIVEN POSITIONIERUNG VON OBJEKTEN

SYSTÈME MURAL POUR POSITIONNER SÉLECTIVEMENT DES OBJETS

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Description

BACKGROUND OF THE INVENTION

Technical Field

[0001] This invention relates to systems, methods, and apparatus for selectively positioning objects near a wall or a similar surface.

Background and Relevant Art

[0002] A builder or installer may use modular walls to divide an open space within a building into individual spaces. Generally, modular walls may include a series of wall modules, which may connect to each other. The individual wall modules may be free-standing or rigidly attached to one or more support structures. In particular, a manufacturer or assembler can usually align and join the various wall modules together to divide an open space and form one or more individual spaces, such as an office, a room, a hallway, etc.

[0003] At least one advantage of modular walls is that they can be relatively easy to configure. In addition, modular wall systems can be less expensive to set up and can allow for reconfiguration more easily than permanent office dividers. For example, using modular wall systems, an installer may quickly form offices, conference areas, hall spaces, and other areas, in an undivided space of the building. If an office space needs change, the users or occupants of the building may readily reconfigure the space and may at least partially reuse existing wall modules or modular walls.

[0004] Unfortunately, many conventional modular walls do not provide movable shelves, cabinets, work surfaces, or other similar furniture without requiring disassembly, repositioning, and reassembly of various components of the modular wall. Some conventional modular walls that automate movement of furniture elements, often require unsightly mechanisms that may interfere with selecting a position of such shelves or other components and the modular wall.

[0005] US 6,676,233 discloses a solution for having a movable furniture attached to a wall. Accordingly, there are a number of disadvantages in wall modules and modular walls that can be addressed.

BRIEF SUMMARY OF THE INVENTION

[0006] Implementations of the present invention comprise systems configured to assist in the vertical placement of furniture items, in particular, furniture items that are attached to a wall system. Implementations of the present invention can comprise a movement assembly that allows an object, such as a work surface, to be moved vertically along a wall. The present invention also provides safety benefits incorporated into the movement assembly. For example, in implementations of the present

invention a work surface can be safely moved from a sitting position to a standing position and vice versa.

[0007] The present invention provides a system according to the appended claim 1. Preferred embodiments are detailed in the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] In order to describe the manner in which the above-recited and other advantages and features of the invention can be obtained, a more particular description of the invention briefly described above will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments of the invention and are not therefore to be considered to be limiting of its scope, the invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

Figure 1 illustrates a perspective view of system configured for adjusting the height of an object on a modular wall in accordance with an implementation of the present invention;

Figure 2 illustrates a bottom perspective of the system of Figure 1;

Figure 3A illustrates an adjustment guide bracket shown in Figure 2 being driven by a drill in accordance with an implementation of the present invention;

Figure 3B illustrates an adjustment guide bracket shown in Figure 3A with the tension plate in a different position in accordance with an implementation of the present invention;

Figure 4 illustrates a power adjustment guide in accordance with an implementation of the present invention;

Figure 5 illustrates a work surface connected to a height adjustment arm, which in turn is connected to a tensioned cable in accordance with an implementation of the present invention;

Figure 6 illustrates a work surface connected to a height adjustment arm, which in turn is connected to relaxed cable, in accordance with an implementation of the present invention;

Figure 7A depicts a work surface positioned in a first angular position in accordance with an implementation of the present invention; and

Figure 7B depicts the work surface of Figure 13A positioned in a second angular position in accordance with an implementation of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0009] The present invention is a system configured to assist in the vertical placement of furniture items, in par-

particular, furniture items that are attached to a wall system. Implementations of the present invention can comprise a movement assembly that allows an object, such as a work surface, to be moved vertically along a wall. The present invention also provides safety benefits incorporated into the movement assembly. For example, in implementations of the present invention a work surface can be safely moved from a sitting position to a standing position and vice versa.

[0010] Accordingly, implementations of the present invention allow users to easily and safely adjust the heights of various wall-attached furniture items, including but not limited to horizontal surfaces, such as desks. Additionally, implementations of the present invention increase user safety by not exerting an active downward force on the furniture items when they are being lowered. For example, when a user is lowering a surface such as a desk from a standing position to a sitting position, in at least one implementation, the only downward pressure applied to the desk is the weight of the desk and the objects on the desk (along with any other additional downward pressure that a user may be physically exerting). Accordingly, if the desk is lowered when a user is underneath the desk, or while other objects are beneath the desk, the ability of the desk to cause harm or damage will be limited.

[0011] For example, Figure 1 illustrates a modular wall height adjustment system 100. The depicted system 100 comprises a furniture item, in this case a work surface 110 (i.e., a desk), that can be raised and lowered by a user as desired. The modular wall height adjustment system 100 shows the work surface 110 connected to a height adjustment arm 140 that in turn is connected to a channel bracket 120. The channel bracket 120 comprises a vertically positioned track member that engages with a head beam 130 at the top of the modular wall section 150.

[0012] While Figure 1 depicts only a single modular wall section 150, the present invention can be practiced with a plurality of different modular wall sections 150 in a plurality of different configurations. Additionally, the present invention can also be practiced outside of modular walls. For example, the height adjustment system of the present invention can be embedded within a permanent wall. Of course, one will also appreciate that the use of a work surface 110 in the present invention is merely exemplary. In alternate implementations, other furniture items can interface with the height adjustment system 100. For example, furniture items that interface with the system can include chairs, lights, shelves, appliances, cupboards, etc. In other implementations, the height adjustment system can also be completely external, either hanging off a wall or free standing.

[0013] Figure 2 illustrates another perspective of the modular wall height adjustment system 100. The depicted perspective is looking up at the modular wall height adjustment system 100 from a position below the work surface 110. As such, Figure 2 illustrates several addi-

tional features of the present invention. In particular, Figure 2 depicts a manual adjustment guide 200. The manual adjustment guide 200 includes manual adjustment components 230 that are engaged with a cable system 210. Specifically, the cable system 210 engages with the manual adjustment guide 200 and then extends onward to a head beam 130 (also shown in Figures 5 and 6).

[0014] As depicted, the manual adjustment guide 200 is attached to the bottom surface of the furniture item or work surface 110. As used herein, an "interface surface" of a furniture item is the surface or surfaces that a user most directly interacts with. For example, a user most directly interacts with the top (see Figure 1) of a work surface 110. As such, by attaching the manual adjustment guide 200 to the bottom of the work surface 110 - on a surface that is not the interface surface - a user is able to have full use of the interface surface on the work surface 110 without direct interference from the manual adjustment guide 200.

[0015] Figure 2 further shows a drill 240 driving the manual adjustment guide 200. As will be more fully explained in subsequent pictures, a user can adjust the height of the work surface 110 with respect to the modular wall section 150 by driving the manual adjustment guide 200 one direction or the other (e.g., by rotating screw 340 via drill 240; see also Figure 3). As the manual adjustment guide 200 is driven, the manual adjustment guide 200 retracts or extends the cables 210, which causes the work surface 110 to be raised or lowered. One will understand, however, that many different methods can be used, other than using a drill, to similarly actuate the manual adjustment guide. For example, implementations of the invention can include a rotatable knob or handle could be attached to the manual adjustment guide 200 and used to actuate the system without an automated mechanism such as the illustrated drill 240.

[0016] Additionally, in at least one implementation, the screw 340 can comprise a unique head that only allows particular tools to attach. As such, adjustment of the height of work surfaces 110 can be limited to only individuals with the particular tool. This may be beneficial in situations where an organization does not want individuals adjusting the height of work surfaces 110 at will.

[0017] Further, in at least one implementation, a single manual adjustment guide 200 can be used to control the height of a plurality of work surfaces 110. For example, multiple work surfaces 110 can be physically connected such that adjusting the height of one work surface 110 adjusts the height of all of the attached work surfaces 110. In at least one implementation, a single manual adjustment guide 200 can be in communication with cables 210 that route through multiple work surfaces 110. As such, driving the single manual adjustment guide 200 can adjust the height of the multiple work surfaces 110. One will understand that the single manual adjustment guide 200 can be in communication with a single set of cables 210 that routes through multiple work surfaces 110, or with multiple sets of cables 210 that route through

multiple work surfaces 110 in parallel.

[0018] Allowing a single manual adjustment guide 210 to control multiple work surfaces 110 may provide several benefits. For example, controlling multiple work surfaces 110 with a single manual adjustment guide 210 may allow an organization to control the aesthetic of a work area. In contrast, if each individual work surface 210 can be positioned at a different height the resulting mixture of work surface 210 heights might create a jumbled aesthetic. Similarly, limiting the number of manual adjustment guides 210 that are attached to work surfaces 110 may create a better aesthetic by removing the manual adjustment guide 210 from direct sight. Additionally, controlling multiple work surfaces 110 with a single manual adjustment guide 200 may save costs by requiring fewer manual adjustment guides 200 and less accompanying maintenance.

[0019] While not fully depicted in Figure 2, one will understand that there are a myriad number of ways that the cables 210 can be redirected using pulleys or other means to change the direction of the cables 210 from being parallel to the bottom of the work surface 110 to being parallel to the channel brackets 120. In particular, the cables 210 can be redirected such that one cable 210a runs adjacent to the left channel bracket 120a, and another cable 210b runs adjacent to the right channel bracket 120b.

[0020] Figure 3A illustrates an adjustment guide bracket 300 of the present invention. Specifically, the adjustment guide bracket 300 is a portion of the above described manual adjustment guide 200. As depicted, the cables 210 extend into the adjustment guide bracket 300. The cables 210 can also include attachment points that can be used to prevent the cables from slipping through a cable engagement point 330.

[0021] Figure 3A also shows that, the cables 210 extend into the manual adjustment guide 200 and engage with cable engagement points 330 on the cable tension plate 350. A screw 340 further intersects the cable tension plate 350. A portion of the screw 340 extends through a spacer 325. This portion of the screw 340 can be rotated as described above and depicted (e.g., with a drill, manually by hand, with an integrated handle, etc.) to retract or extend the cables 210.

[0022] In at least one implementation, the screw 340 can include a bolt head or other similar attachments that allows standard tools, such as drills, socket wrenches, wrenches, screw drivers, etc., to be attached to and drive the screw 340. When the manual or automated driving means 240 rotates the screw 340, a thread on the body of the screw 340 causes the cable tension plate 350 to travel longitudinally along the length of the manual adjustment guide 200. The direction in which the screw 340 is rotated determines the direction in which the cable tension plate 350 travels. As the cable tension plate 350 travels along the length of the manual adjustment guide 200, the cable engagement points 330 pull (i.e., retract) the cable 210, or relax (i.e., extend) the cables 210 based

upon the direction that the cable tension plate 350 travels.

[0023] In at least one implementation, retracting the cables 210 towards the spacer 325 exerts an active force on the cables 210, as rotating the screw 340 actually pulls the cables towards the drive plate 320. In contrast, in at least one implementation, extending or relaxing the cables 210 by rotating the screw 340 the other direction does not actively push the cables 210 out of the manual adjustment guide 200. For example, as shown in Figure 3B, while rotating the screw 340 causes the cable tension plate 350 to travel away from the spacer 325 and drill 240, the cables 210 may become relaxed and not necessarily pushed out of the manual adjustment guide 200 unless another force or weight is pulling the cables out of the manual adjustment guide 200.

[0024] Figure 4 illustrates another implementation of an adjustment guide. Specifically, the adjustment guide depicted is a power adjustment guide 400. The depicted power adjustment guide 400 comprises features analogous to the manual adjustment guide 200. For example, the power adjustment guide 400 can include a shaft 410 that guides cables 210 in one of two directions. One will understand, however, that other components could be used to create another adjustment guide 200 that performs the function of relaxing and extending the cable 210. For example, in some implementations a rotatable spool can be used to retract or extend the cables 210.

[0025] As depicted, the function of the depicted power adjustment guide 400 is similar to that of the manual adjustment guide 200, with an exception that the driving mechanism 450 (i.e., the drill 240 of Figure 5) is incorporated within the power adjustment guide 400. In at least one implementation, the power adjustment guide 400 can comprise any cable tensioner device. As such, a user can adjust the height of the work surface 110 without additional tools by simply activating the driving mechanism 450 in the desired direction.

[0026] Using either the manual adjustment guide 200 or the power adjustment guide 400, a user can cause the work surface 110 to raise or lower with respect to a modular wall section 150. For example, when a user drives the adjustment guide (200, 400) to retract the cable 210, the retracting cable 210 will cause the work surface 110 to rise. In contrast, when a user drives the adjustment guide (200, 400) to extend or relax the cable 210, the weight of the work surface 110, along with any additional external force, will cause the work surface to lower and at the same time cause the cables 210 to again become tense.

[0027] One will appreciate based upon the above disclosure and accompanying figures that the manual adjustment guide 200 and the power adjustment guide 400 can be easily interchanged. For instance, a user may initially install work surfaces 110 of the present invention with the manual adjustment guide 200. Eventually though, the user may decide to install power adjustment guides 400 instead. As described and depicted above, one will understand that a power adjustment guide 400

can easily be interchanged with a manual adjustment guide 200, and vice versa. In particular, in a least one implementation the adjustment guide bracket 300 is interchangeable between the manual adjustment guided 200 and the power adjustment guide 400 such that only the driving components would need to be changed.

[0028] Figure 5 illustrates a work surface 110 connected to a height adjustment arm 140, which in turn is connected to a channel bracket 120 (shown in Figure 1). In particular, Figure 5 illustrates a close up of a portion of Figure 1, except that the channel bracket 120 of Figure 5 has been removed. Figure 5 further shows that a cable 210 extends from a channel insert 500 and connects to a head beam 130. Though not visible in this Figure, the cable 210 may extend through the channel insert 500 from a manual adjustment guide 200 or power adjustment guide 400 as described above and shown in Figure 2. In view of Figure 5 and as otherwise disclosed in this specification, one will understand that the retraction of cable 210 by an adjustment guide (200, 400) can cause the height adjustment arm 140 and accompanying work surface 110 to rise in height.

[0029] In contrast to a retracting cable 210 pulling the work surface 110 towards the head beam 130 and causing the work surface 110 to rise (as shown in Figure 5), Figure 6 illustrates a work surface 110 connected to a height adjustment arm 140, which in turn is connected to relaxed cable 210. The depicted cable 210 may be relaxed because a user has driven the adjustment guide (200, 400) in a way that caused the cable 210 to be extended. Alternatively, an external force (e.g., a user) may be pushing upwards on the work surface 110. As mentioned above, in at least one implementation, the adjustment guide (200, 400) applies no downward force to the work surface 110. When a user drives the adjustment guide (200, 400) to extend cable 210, the weight of the work surface 110 and objects on the work surface or some other external force can cause the work surface 110 to lower.

[0030] In at least one implementation, not exerting a downwards force on the work surface 110 can provide a safety feature to users. For example, if a system were to exert a downwards force on the work surface 110 in order to lower the surface, the lowering work surface 110 may inadvertently smash a user or other valuable items that happen to be below the work surface 110. In contrast, in at least one implementation of the present invention and as described above, when a user is driving an adjustment guide (200, 400) to lower a work surface 110, the only force applied is the weight of the work surface 110 and any objects that happen to be on the work surface 110. Accordingly, implementations of the present invention can minimize or reduce the likelihood that a user or valuable object is significantly injured or damaged when bearing only the weight of the work surface 110.

[0031] Figures 7A and 7B depict an additional safety feature that is incorporated into the present invention. Specifically, Figures 7A and 7B depict two bearings (710,

720) incorporated into the channel inserts 500 that allow the work surface 110 to tilt at an angle, as shown in Figure 7B. As depicted, the bearings (710, 720) are smaller than the channel brackets 120 and are offset from each other, such that in Figure 7A the upper bearing 710 is in contact with a front wall 122 of the channel bracket 120, while the lower bearing 720 is in contact with a back wall 124 of the channel bracket 120. In at least one implementation, the upper bearing 710 and the lower bearing 720 can be connected within the channel insert 500 in such a way that the bearings (710, 720) are positioned to only be able to contact different walls (122, 124) of the channel bracket 120.

[0032] In other words, the bearings (710, 720) have a "loose" fit or attachment in channel bracket 120 that allows an amount of rotation of the work surface 110. For example, Figure 7A shows that the work surface 110 is substantially flat and even. In Figure 7B, however, the work surface 110 is tilted at an angle (i.e., rotated an amount toward channel(s) 120(a, b)), and the upper bearing 710 is now in contact with the back wall 124 of the channel bracket 120, while the lower bearing 720 is in contact with the front wall 122 of the channel bracket 120. Figure 7B depicts an arrow that shows where a force can be applied to cause the work surface 110 to tilt as depict.

[0033] One will appreciate therefore that, in at least one implementation, the ability for the work surface 110 to tilt can comprise a safety feature for a user. For instance, generally a user will be positioned with respect to the work surface 110 in a way that only the front portion of the work surface 110 would come in contact with the user if the work surface were being lowered (i.e., the area where the arrow is pointing in Figure 13B). Accordingly, if the work surface 110 were to be lowered onto a user it is likely that the user would cause the work surface 110 to tilt as depicted in Figure 13B. This slight tilt motion may provide a user with a brief warning that the work surface 110 is being lowered. Additionally, this tilt position may also function to place additional weight onto a cable 210 so that it extends through the channel insert 500 and away from the user.

[0034] Additionally, at least one implementation of the present invention can include a leveler that enables each work surface 110 to be adjusted such that it is level and flush with a neighboring work surface 110. In at least one implementation of the present invention, work surfaces 110 form a portion of a cantilever. Because these conditions reflect a cantilevered load, there is a great likelihood that, through normal deflection, work surfaces 110 would not rest in a level state if left unadjusted. In order to provide leveling adjustment, the lower arm bearing 720 may be mounted to an adjustable pivot block (not shown). By adjusting this lower bearing 720 in or out, the angular relationship between the upper 710 and lower 720 bearings can be modified. One having ordinary skill in the art will understand that adjusting the angular relationship between the upper 710 and lower 720 bearings can bring the work surfaces 110 into level and flush conditions,

regardless of the mass of the cantilevered load.

[0035] Implementations of the present invention can comprise a method of actuating an adjustment guide. For example, in at least one implementation, a user can actuate an adjustment guide using a manual method or automatic method of actuation. The manual method can comprise using an external tool to drive the adjustment guide.

[0036] When actuated, the adjustment guide can increase tension or loosen tension on one or more cables that connect a furniture item to a modular wall. Increasing and loosening tension can be accomplished by the relative horizontal placement of a tension plate. In particular, the one or more cables may be connected to a tension plate. Moving the tension plate may cause the cables to increase tension on the cables or to loosen tension on the cables based upon the direction of movement of the tension plate.

[0037] In at least one implementation, the one or more cable device can be connected to a tensioning device other than a tension plate. For example, the cables can be connected to a rotatable spool. In this case, the rotatable spool can be actuated, either manually or automatically, and can increase or decrease tension on the one or more cables.

[0038] The one or more cables can extend from the adjustment guide to a vertical position on a modular wall. Increasing the tension on the one or more cables can cause the furniture item to rise vertically with respect to the modular wall. As such, a user can raise or lower the furniture item on the wall by actuating an adjustment guide.

[0039] Accordingly, as described above and depicted in the accompanying figures, the present invention provides systems for adjusting the height of furniture items attached to a wall. While most of the above examples of an object have focused around a work surface 110, one will understand that a variety of different furniture items may be used. Additionally, one will also understand that multiple modular wall sections 150 can be used together, with a plurality of the wall sections 150 comprising their own height adjustable work surface 110.

[0040] The present invention may be embodied in other specific forms without departing from the scope of protection defined by the appended claims. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing description.

Claims

1. A system (100) for adjusting the height of a furniture item (110), the system comprising:

a frame structure (120, 130), the frame structure comprising a channel bracket (120) including a

vertically positioned track member that extends a particular height, the channel bracket including a front wall (122) and a back wall (124) separated by a first width;

a furniture item (110) in communication with the channel bracket of the frame structure through the vertically positioned track member;

a height adjustment arm (140) connected to the channel bracket (120) and the furniture item (110) and comprising a channel insert (500) disposed within the channel bracket, the channel insert being configured to slide along a longitudinal length of the channel bracket, wherein the channel insert comprises:

a first bearing (710) disposed proximate a first end of the channel insert, the first bearing comprising a diameter that is less than the first width, the first bearing in communication with the front wall of the channel insert; and

a second bearing (720) disposed proximate a second end of the channel insert, wherein the first and the second bearing (710, 720) are smaller than the channel bracket (120) and are horizontally offset from each other relative to the channel insert (500), the second bearing comprising a diameter that is less than the first width, the second bearing in communication with the back wall of the channel insert, and

an adjustment guide (200, 400) in communication, through a cable (210), with both the furniture item and the frame structure, wherein the adjustment guide further comprises:

a cable tensioner device (325, 340, 350, 400) in communication with the cable, wherein the cable extends from the cable tensioner device to the frame structure, and wherein actuating the cable tensioner device cause the furniture item to change vertical location with respect to the frame structure, and

wherein, when the furniture item contacts an item while being lowered by the adjustment guide, the first bearing contacts the back wall and the second bearing contacts the front wall, causing the furniture item to tilt towards the frame structure.

2. The system as recited in claim 1, wherein the cable tensioner device comprises a rotatable spool or wherein the cable tensioner device comprises a tension plate (350) connected to a driving shaft (340), wherein the driving shaft is configured to move the

tension plate in different directions along the shaft based upon the direction of rotation of the driving shaft.

3. The system as recited in claim 1, wherein actuating the cable tensioner device causes the cable to retract and the furniture item to rise with respect to a modular wall.
4. The system as recited in claim 1, further comprising a cable engagement point (330) that is configured to receive and hold the cable.
5. The system as recited in claim 1, wherein the adjustment guide is attached to the furniture item.
6. The system as recited in claim 5, wherein the furniture item comprises an interface surface that is substantially parallel to a floor and wherein the adjustment guide is attached to an underside of the interface surface, and wherein actuating the cable tensioner device such that the cable extends, causes the furniture item to lower with respect to a modular wall, and further wherein extending the cable does not directly exert a significant downward force on the furniture item.
7. A system as recited in claim 1, wherein: the adjustment guide is configured to adjust the vertical positioning of the furniture item relative to a modular wall system, the adjustment guide comprising: a cable engagement point that is configured to receive and hold a cable, the cable engagement point disposed upon a tension plate, the tension plate connected to the cable tensioner device, wherein the cable tensioner device is configured to move the tension plate and thereby extend or retract the cable.
8. The system as recited in claim 7, wherein the cable tensioner device comprises a driving shaft.
9. The system as recited in claim 8, wherein:

the tension plate moves different directions along the shaft based upon the direction of rotation of the driving shaft, and

rotating the driving shaft in a first direction causes tension on the cable to increase and the furniture item to rise with respect to the modular wall system.
10. The system as recited in claim 8, wherein the driving shaft comprises a driving head that is configured to attach to a drill or wherein the driving shaft comprises a driving head that is a standard sized bolt head.
11. The system as recited in claim 7, wherein the cable tensioner device comprises an integrated electronic

cable tensioner device (400) that is integrated within the adjustment guide and that when activated moves the tension plate.

12. The system as recited in claim 7, wherein the furniture item is configured to tilt towards the modular wall system when it contacts an item while being lowered by the adjustment guide.
13. The system as recited in claim 7, wherein:

the wall mounted furniture comprises an upper surface and a lower surface;

the channel bracket is physically attached to a wall; and

the adjustment guide further comprises: a driving mechanism, wherein the driving mechanism is configured to exert an active force in only a single direction.
14. The system as recited in claim 13, wherein the channel bracket extends parallel to the wall.

Patentansprüche

1. System (100) zum Anpassen der Höhe eines Möbelstücks (110), wobei das System umfasst:

eine Rahmenstruktur (120, 130), wobei die Rahmenstruktur einen Rinnenträger (120) umfasst, der ein vertikal positioniertes Schienenelement enthält, das in einer bestimmten Höhe verläuft, wobei der Rinnenträger eine Vorderwand (122) und eine Rückwand (124) enthält, die durch eine erste Breite getrennt sind;

ein Möbelstück (110) über das vertikal positionierte Schienenelement in Verbindung mit dem Rinnenträger der Rahmenstruktur;

einen Höhenanpassungsarm (140), der mit dem Rinnenträger (120) und dem Möbelstück (110) verbunden ist und einen Rinneneinsatz (500) umfasst, der innerhalb des Rinnenträgers angeordnet ist, wobei der Kanaleinsatz ausgelegt ist, entlang einer Länge des Rinnenträgers in Längsrichtung zu gleiten, wobei der Rinneneinsatz umfasst:

ein erstes Lager (710), das in der Nähe eines ersten Endes des Rinneneinsatzes angeordnet ist, wobei das erste Lager einen Durchmesser umfasst, der kleiner als die erste Breite ist, wobei das erste Lager in Verbindung mit der Vorderwand des Rinneneinsatzes steht; und

ein zweites Lager (720), das in der Nähe eines zweiten Endes des Rinneneinsatzes angeordnet ist, wobei das erste und das

zweite Lager (710, 720) kleiner als der Rinnenträger (120) sind und horizontal voneinander relativ zum Rinneneinsatz (500) versetzt sind, wobei das zweite Lager einen Durchmesser umfasst, der kleiner als die erste Breite ist, wobei das zweite Lager in Verbindung mit der Rückwand des Rinneneinsatzes steht, und

eine Anpassungsführung (200, 400), die über ein Kabel (210) sowohl mit dem Möbelstück als auch mit der Rahmenstruktur in Verbindung steht, wobei die Anpassungsführung ferner umfasst:

eine Kabelspannvorrichtung (325, 340, 350, 400) in Verbindung mit dem Kabel, wobei das Kabel von der Kabelspannvorrichtung zur Rahmenstruktur verläuft und wobei ein Betätigen der Kabelspannvorrichtung bewirkt, dass das Möbelstück die vertikale Position in Bezug auf die Rahmenstruktur ändert, und

wobei, wenn das Möbelstück ein Element berührt, während es von der Anpassungsführung abgesenkt wird, das erste Lager die Rückwand berührt und das zweite Lager die Vorderwand berührt, was bewirkt, dass sich das Möbelstück zur Rahmenstruktur hin neigt.

2. System nach Anspruch 1, wobei die Kabelspannvorrichtung eine drehbare Spule umfasst oder wobei die Kabelspannvorrichtung eine Spannplatte (350) umfasst, die mit einer Antriebswelle (340) verbunden ist, wobei die Antriebswelle ausgelegt ist, die Spannplatte auf Grundlage der Drehrichtung der Antriebswelle in verschiedene Richtungen entlang der Welle zu bewegen.
3. System nach Anspruch 1, wobei das Betätigen der Kabelspannvorrichtung bewirkt, dass das Kabel eingezogen wird und das Möbelstück in Bezug auf eine modulare Wand angehoben wird.
4. System nach Anspruch 1, das ferner einen Kabelaufnahmepunkt (330) umfasst, der ausgelegt ist, das Kabel aufzunehmen und zu halten.
5. System nach Anspruch 1, wobei die Anpassungsführung am Möbelstück befestigt ist.
6. System nach Anspruch 5, wobei das Möbelstück eine Anschlussfläche umfasst, die wesentlich parallel zu einem Boden ist, und wobei die Anpassungsführung an einer Unterseite der Anschlussfläche befestigt ist und wobei das Betätigen der Kabelspannvorrichtung, sodass das Kabel ausfährt, bewirkt, dass

das Möbelstück in Bezug auf eine modulare Wand abgesenkt wird, und wobei ferner ein Ausfahren des Kabels nicht direkt eine wesentliche abwärtsgerichtete Kraft auf das Möbelstück ausübt.

7. System nach Anspruch 1, wobei: die Anpassungsführung ausgelegt ist, die vertikale Positionierung des Möbelstücks relativ zu einem modularen Wandsystem anzupassen, wobei die Anpassungsführung umfasst:
 - einen Kabelaufnahmepunkt, der ausgelegt ist, ein Kabel aufzunehmen und zu halten, wobei der Kabelaufnahmepunkt auf einer Spannplatte angeordnet ist, wobei die Spannplatte mit der Kabelspannvorrichtung verbunden ist, wobei die Kabelspannvorrichtung ausgelegt ist, die Spannplatte zu bewegen und dadurch das Kabel auszufahren oder einzuziehen.
8. System nach Anspruch 7, wobei die Kabelspannvorrichtung eine Antriebswelle umfasst.
9. System nach Anspruch 8, wobei:
 - sich die Spannplatte auf Grundlage der Drehrichtung der Antriebswelle in verschiedene Richtungen entlang der Welle bewegt und ein Drehen der Antriebswelle in eine erste Richtung bewirkt, dass sich eine Spannung am Kabel erhöht und das Möbelstück in Bezug auf das modulare Wandsystem angehoben wird.
10. System nach Anspruch 8, wobei die Antriebswelle einen Antriebskopf umfasst, der ausgelegt ist, an einem Bohrer befestigt zu werden, oder wobei die Antriebswelle einen Antriebskopf umfasst, der ein Bolzenkopf mit Standardgröße ist.
11. System nach Anspruch 7, wobei die Kabelspannvorrichtung eine integrierte elektronische Kabelspannvorrichtung (400) umfasst, die innerhalb der Anpassungsführung integriert ist und die bei Aktivierung die Spannplatte bewegt.
12. System nach Anspruch 7, wobei das Möbelstück ausgelegt ist, sich zum modularen Wandsystem zu neigen, wenn es ein Element berührt, während es von der Anpassungsführung abgesenkt wird.
13. System nach Anspruch 7, wobei:
 - die wandmontierte Möbeleinheit eine obere Oberfläche und eine untere Oberfläche umfasst; der Rinnenträger physisch an einer Wand befestigt ist; und
 - die Anpassungsführung ferner umfasst: einen Antriebsmechanismus, wobei der Antriebsmechanismus ausgelegt ist, eine aktive

Kraft in nur eine einzige Richtung auszuüben.

14. System nach Anspruch 13, wobei der Rinnenträger parallel zur Wand verläuft.

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Revendications

1. Système (100) pour ajuster la hauteur d'un meuble (110), le système comprenant :

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une structure de cadre (120, 130), la structure de cadre comprenant un support à canal (120) comprenant un élément glissière positionné verticalement qui s'étend sur une hauteur particulière, le support à canal comprenant une paroi avant (122) et une paroi arrière (124) séparées par une première largeur ;

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un meuble (110) en communication avec le support à canal de la structure de cadre par l'intermédiaire de l'élément glissière positionné verticalement ;

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un bras d'ajustement de hauteur (140) relié au support à canal (120) et au meuble (110) et comprenant un insert de canal (500) disposé à l'intérieur du support à canal, l'insert de canal étant configuré pour coulisser le long d'une longueur longitudinale du support à canal, l'insert de canal comprenant :

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un premier roulement (710) disposé à proximité d'une première extrémité de l'insert de canal, le premier roulement comprenant un diamètre qui est inférieur à la première largeur, le premier roulement étant en communication avec la paroi avant de l'insert de canal ; et

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un second roulement (720) disposé à proximité d'une seconde extrémité de l'insert de canal, les premier et second roulements (710, 720) étant plus petits que le support à canal (120) et étant décalés horizontalement l'un de l'autre par rapport à l'insert de canal (500), le second roulement comprenant un diamètre qui est inférieur à la première largeur, le second roulement étant en communication avec la paroi arrière de l'insert de canal, et

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un guide d'ajustement (200, 400) en communication, par l'intermédiaire d'un câble (210), avec à la fois le meuble et la structure de cadre, le guide d'ajustement comprenant en outre :

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un dispositif de mise en tension de câble (325, 340, 350, 400) en communication avec le câble, le câble s'étendant du dispositif de mise en tension de câble à la struc-

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ture de cadre, et

l'actionnement du dispositif de mise en tension de câble amenant le meuble à changer de position verticale par rapport à la structure de cadre, et

lorsque le meuble entre en contact avec un élément tout en étant abaissé par le guide d'ajustement, le premier roulement entre en contact avec la paroi arrière et le second roulement entre en contact avec la paroi avant, amenant le meuble à s'incliner vers la structure de cadre.

2. Système selon la revendication 1, dans lequel le dispositif de mise en tension de câble comprend une bobine rotative ou le dispositif de mise en tension de câble comprend une plaque de tension (350) reliée à un arbre d'entraînement (340), l'arbre d'entraînement étant configuré pour déplacer la plaque de tension dans différentes directions le long de l'arbre sur la base de la direction de rotation de l'arbre d'entraînement.

3. Système selon la revendication 1, dans lequel l'actionnement du dispositif de mise en tension de câble amène le câble à se rétracter et le meuble à s'élever par rapport à une paroi modulaire.

4. Système selon la revendication 1, comprenant en outre un point d'engagement de câble (330) qui est configuré pour recevoir et maintenir le câble.

5. Système selon la revendication 1, dans lequel le guide d'ajustement est fixé au meuble.

6. Système selon la revendication 5, dans lequel le meuble comprend une surface d'interface qui est sensiblement parallèle à un plancher et le guide d'ajustement est fixé à un côté inférieur de la surface d'interface, et l'actionnement du dispositif de mise en tension de câble de telle sorte que le câble s'étend, amène le meuble à s'abaisser par rapport à une paroi modulaire et, en outre, l'extension du câble n'exerce pas directement une force descendante significative sur le meuble.

7. Système selon la revendication 1, dans lequel : le guide d'ajustement est configuré pour ajuster le positionnement vertical du meuble par rapport à un système de paroi modulaire, le guide d'ajustement comprenant : un point d'engagement de câble qui est configuré pour recevoir et maintenir un câble, le point d'engagement de câble étant disposé sur une plaque de tension, la plaque de tension étant reliée au dispositif de mise en tension de câble, le dispositif de mise en tension de câble étant configuré pour déplacer la plaque de tension et, de ce fait, étendre ou rétracter le câble.

8. Système selon la revendication 7, dans lequel le dispositif de mise en tension de câble comprend un arbre d'entraînement.
9. Système selon la revendication 8, dans lequel : 5
- la plaque de tension se déplace dans différentes directions le long de l'arbre sur la base de la direction de rotation de l'arbre d'entraînement, et 10
- la rotation de l'arbre d'entraînement dans une première direction amène la tension sur le câble à augmenter et le meuble à s'élever par rapport au système de paroi modulaire. 15
10. Système selon la revendication 8, dans lequel l'arbre d'entraînement comprend une tête d'entraînement qui est configurée pour être fixée à une perceuse, ou l'arbre d'entraînement comprend une tête d'entraînement qui est une tête de boulon de taille standard. 20
11. Système selon la revendication 7, dans lequel le dispositif de mise en tension de câble comprend un dispositif de mise en tension de câble électronique intégré (400) qui est intégré à l'intérieur du guide d'ajustement et qui, lorsqu'il est activé, déplace la plaque de tension. 25
12. Système selon la revendication 7, dans lequel le meuble est configuré pour s'incliner vers le système de paroi modulaire lorsqu'il entre en contact avec un élément tout en étant abaissé par le guide d'ajustement. 30
- 35
13. Système selon la revendication 7, dans lequel :
- le meuble mural comprend une surface supérieure et une surface inférieure ;
- le support à canal est fixé physiquement à une paroi ; et 40
- le guide d'ajustement comprend en outre : un mécanisme d'entraînement, le mécanisme d'entraînement étant configuré pour exercer une force active seulement dans une unique direction. 45
14. Système selon la revendication 13, dans lequel le support à canal s'étend parallèlement à la paroi. 50
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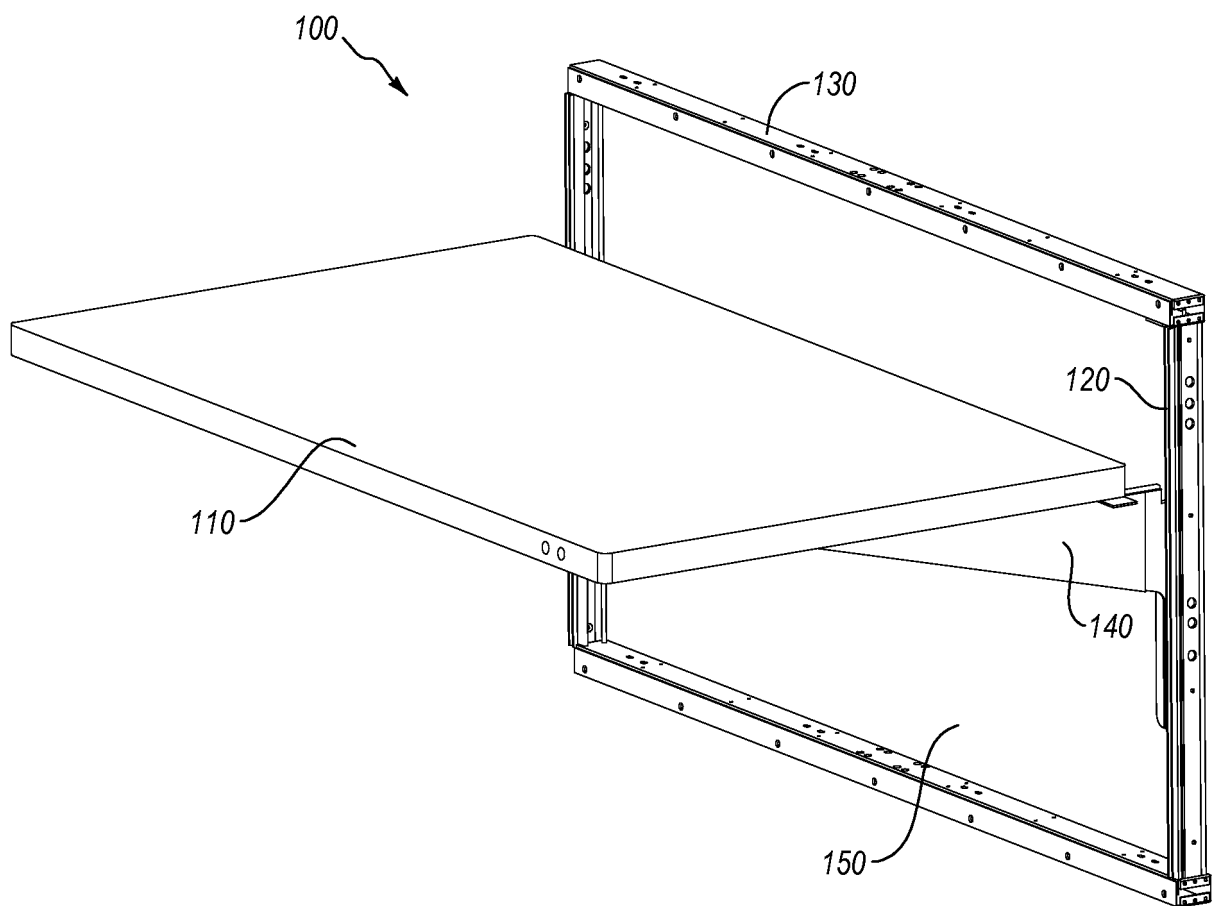


FIG. 1

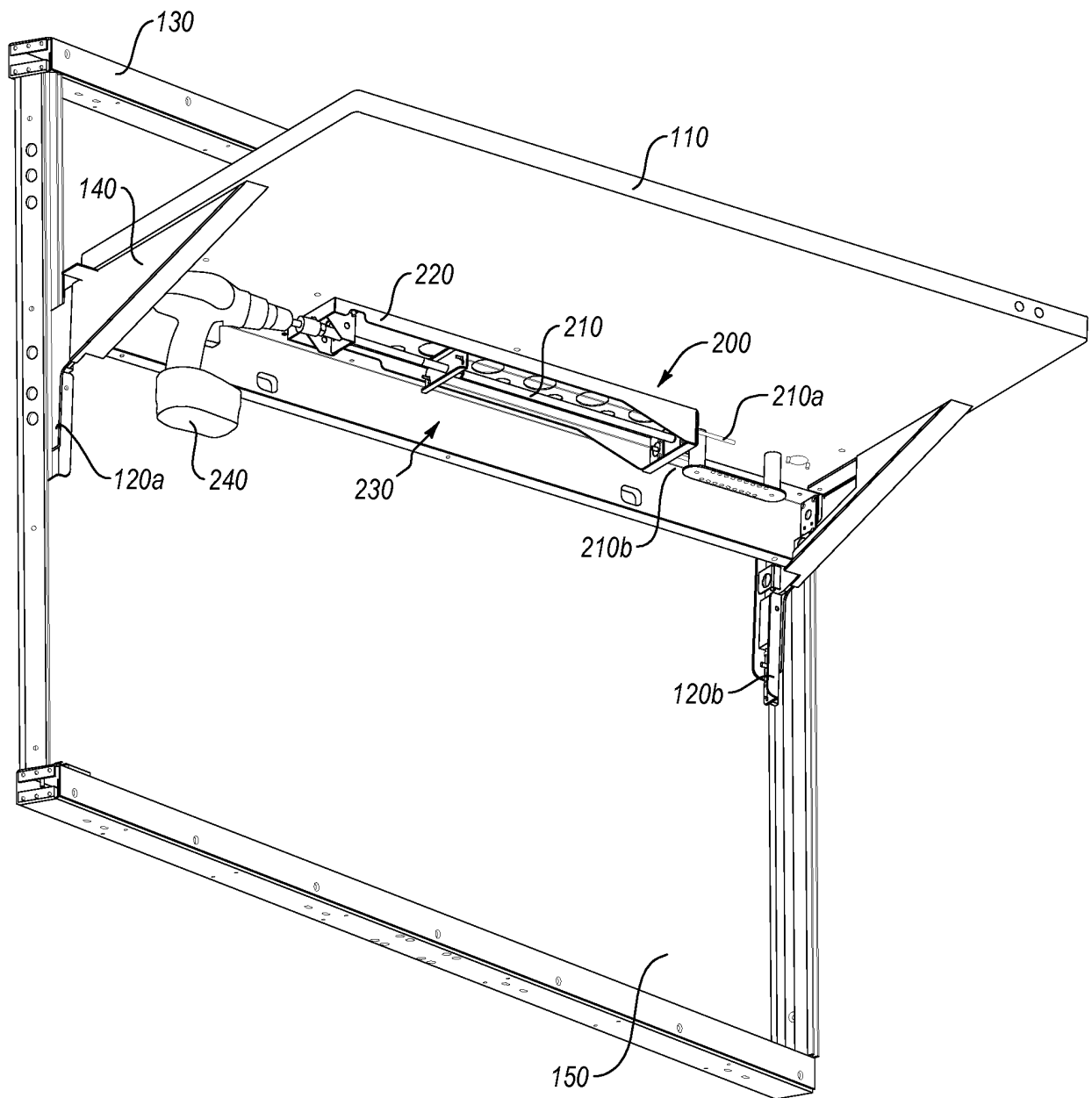


FIG. 2

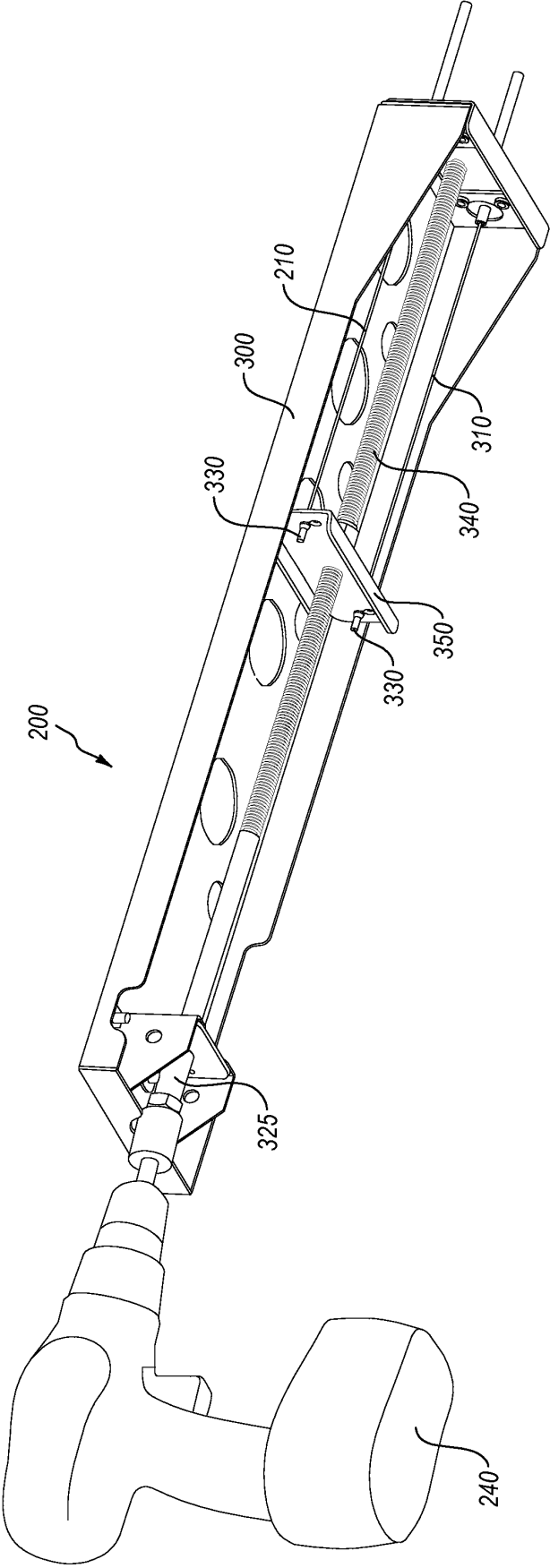


FIG. 3A

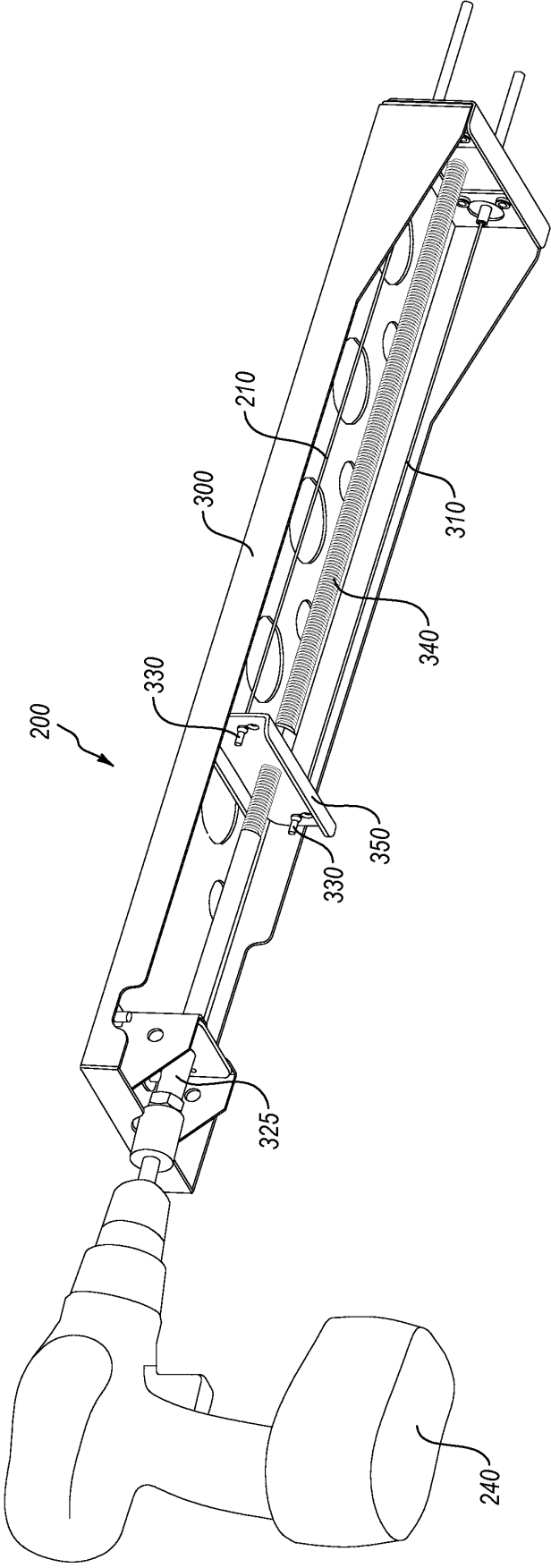
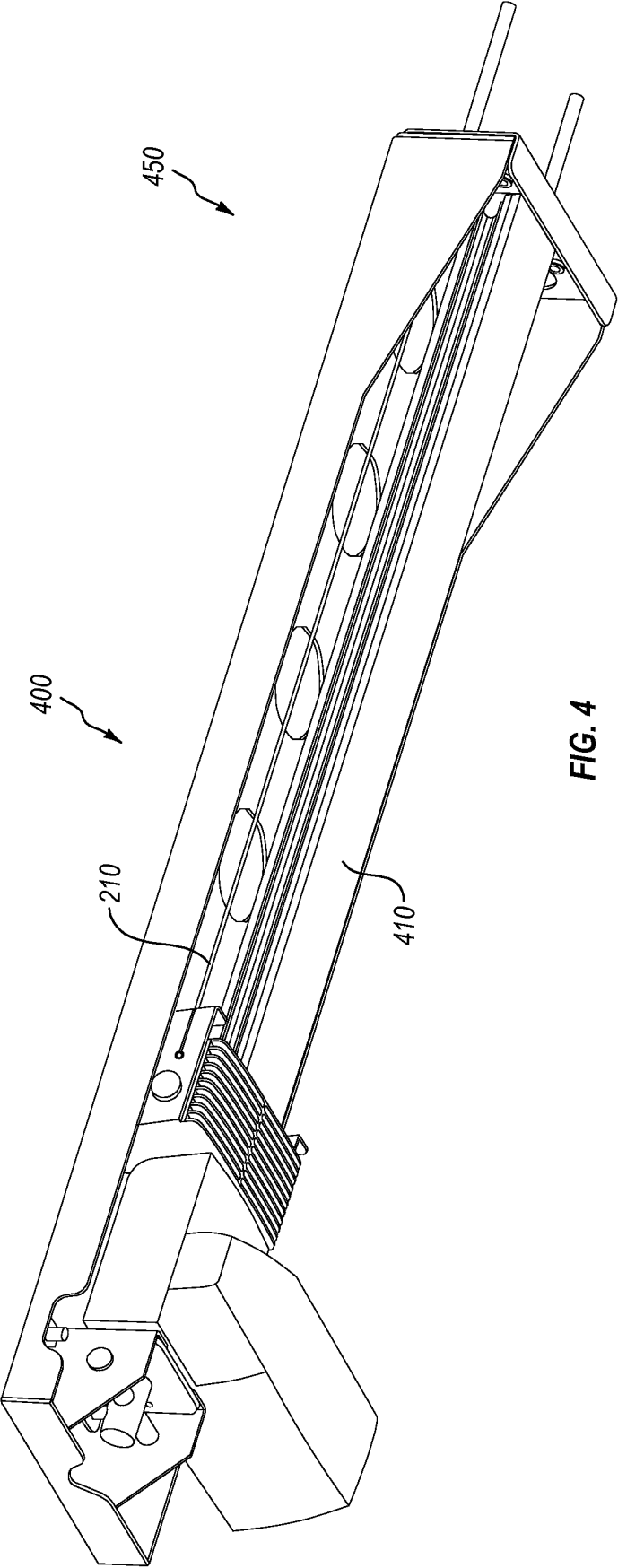


FIG. 3B



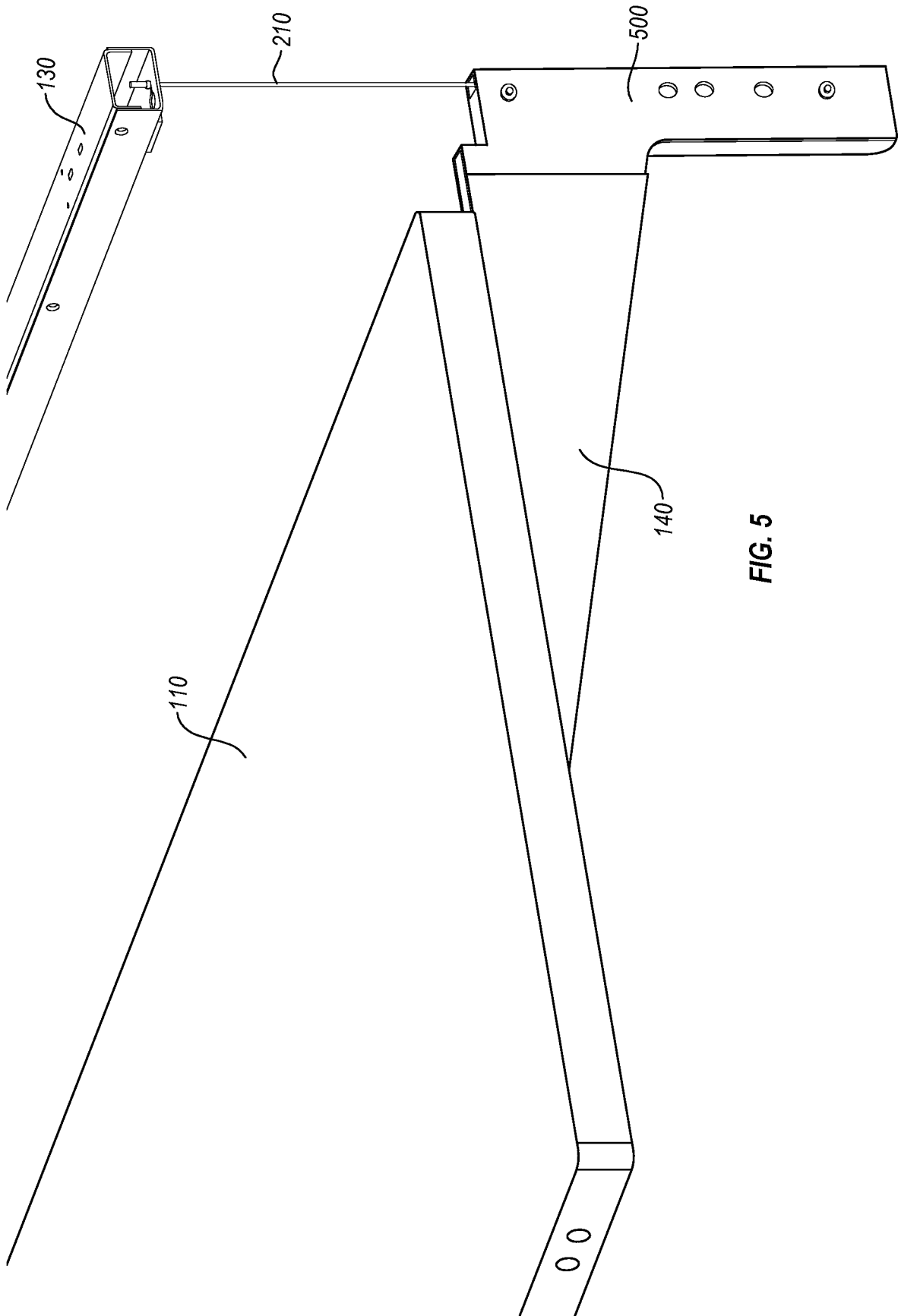


FIG. 5

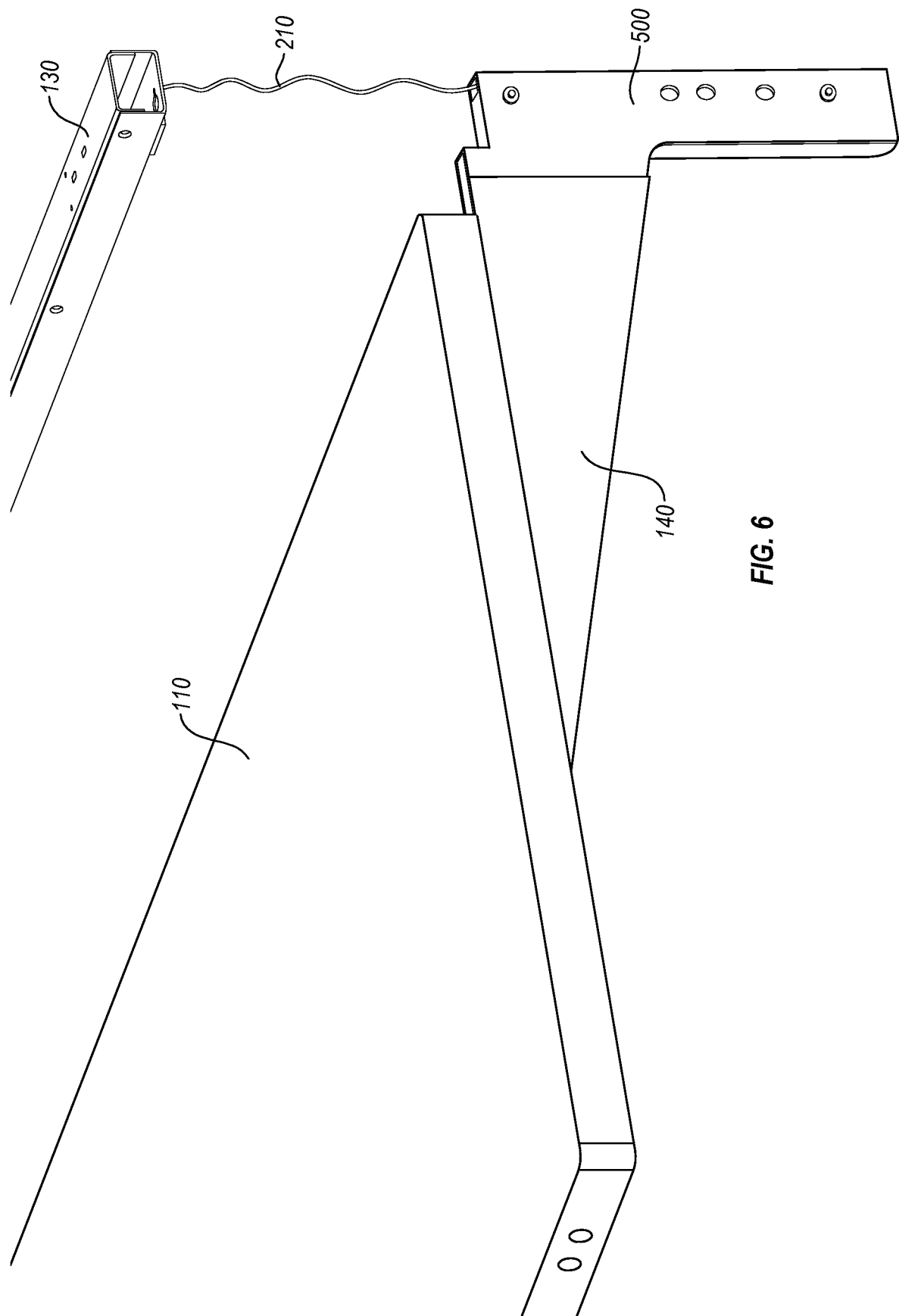


FIG. 6

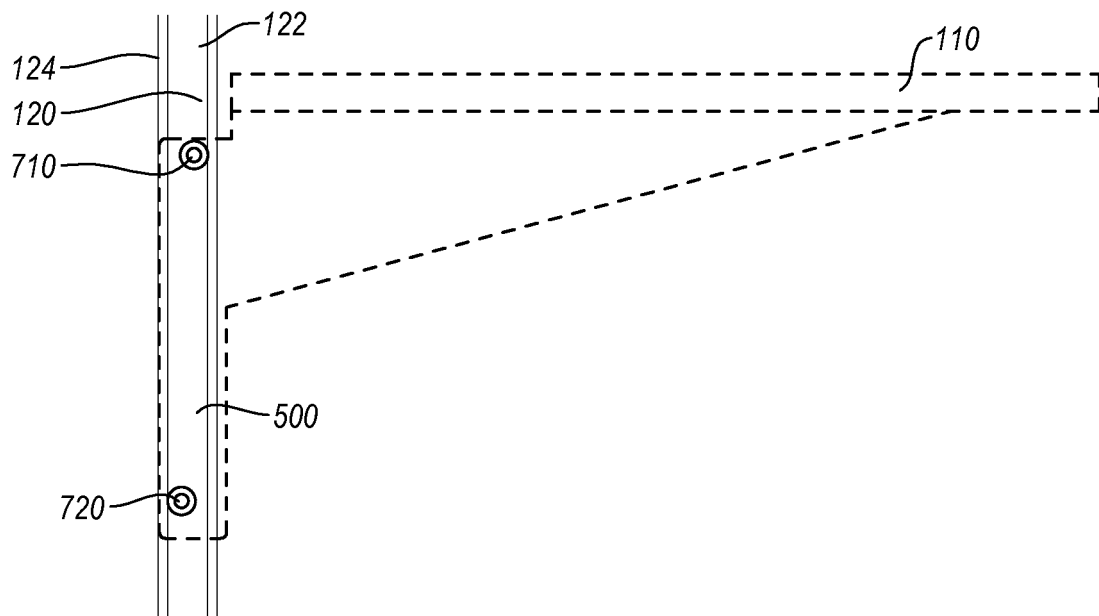


FIG. 7A

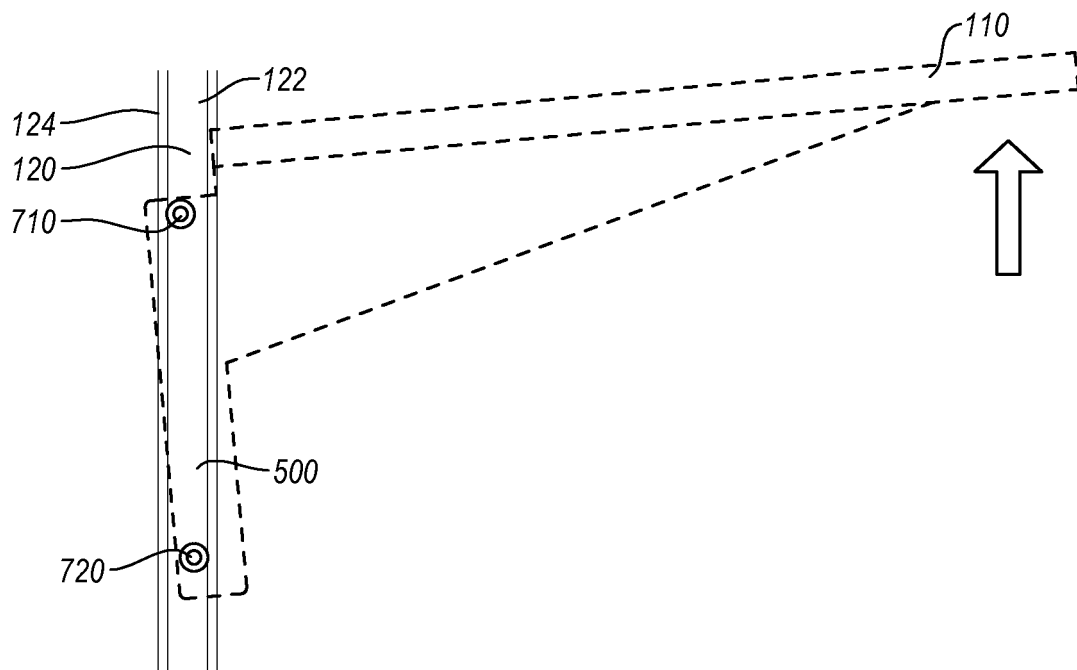


FIG. 7B

REFERENCES CITED IN THE DESCRIPTION

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