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[Continued on next page]

(54) **Title:** ERGONOMIC KEYBOARD AND PERIPHERAL POSITIONING SYSTEM

(57) **Abstract:** A keyboard and keyboard and peripheral position system which may be used with adjustable-height desks.

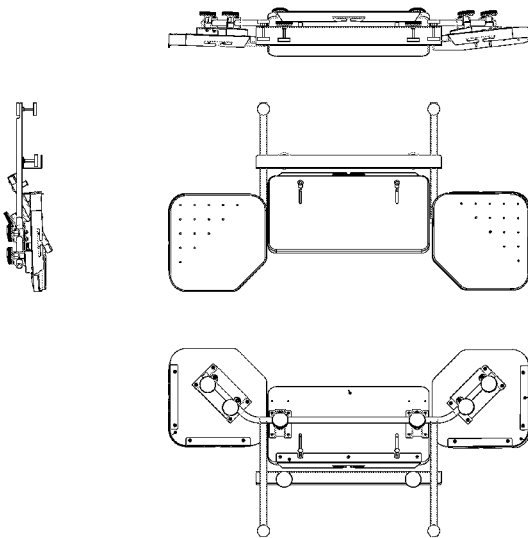


FIG.1A

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## TITLE

## Ergonomic Keyboard and Peripheral Positioning System

## Field

[Para. 01] This disclosure relates to a keyboard and peripheral position system for use with adjustable-height desks, standing desks and treadmill desks used while performing typical office, home or workplace tasks such as electronic communication, computing, etc.

## Background

[Para. 02] In recent years, the increasing use of standing desks, height adjustable desks, and walking treadmills paired with a desk (possibly height adjustable) in a home or work environment have generated a need to have more flexibility in how keyboards and other peripherals can be adjusted due to the much wider range of adjustments required to span sitting, standing, and walking while using these devices.

[Para. 03] The use of standing desks and treadmill desks is becoming more commonplace. Standard computer keyboards are designed for use while sitting at a standard-height desk, often with weight of the user's arms supported by chair arms. Typical keyboards provide for a means of small angle adjustment; however these features only allow adjustment to increase the height of the edge of the keyboard furthest from the user. This direction of angle adjustment is opposite from what is ergonomically proper, which is why under-desk trays that can tilt the front edge of the keyboard higher than the back edge are sold. However, few people use such trays as they are very expensive and many desks have a drawer in the way or have too little available space between the bottom of the desk surface and the top of the user's lap to accommodate such a device comfortably.

[Para. 04] Using a keyboard without an ergonomic under-desk tray to tilt the front edge of the keyboard up can lead to wrist pain and carpal tunnel syndrome as well as "computer hunch," which can misalign the neck and shoulders and lead to chronic pain issues for computer workers. This is one of the worst maladies associated with "sitting disease" as documented in many health studies.

[Para. 05] The advent of standing desks and treadmill desks (both of which can employ height-adjustable desks) has introduced even more serious ergonomic issues for the computer user.

[Para. 06] Another problem with existing keyboard positioning systems is that they do not hold a keyboard solidly and rigidly in one position. The positioning systems flex, move, wobble, and wiggle when reasonable forces are applied to them. These systems can flex or move because there are multiple parts that connect in a chain between the mount to the desk and the keyboard surface. These multiple connections between parts are there because they provide other benefits such as retracting the keyboard under the desk when not in use and allowing the keyboard tray to articulate up to a desired height as the keyboard tray is pulled out and then up. As a cumulative effect of the way these parts are connected, and the given machining tolerances of those connections, there is more opportunity for these parts to flex, or wiggle, and generally not be as solid, stable, or rigid. For example, a slide out drawer has 2 sliders that allow each side of the keyboard tray to slide out. Each of these sliders has an inner bar that slides inside an outer bar. This allows for some wiggle between the two parts. Some of these sliders may have bearings inserted between the inner and outer bar to reduce friction while they are sliding. All of the interfaces between parts allow for some wiggle room between the parts which ultimately creates a less stable surface.

[Para. 07] Another example is where there are movable joints that extend and hold the keyboard surface out in front of the table. Again, these movable adjustable joints are prone to wiggle due to the manufacturing tolerances and they extend the overall length of the lever arm where the majority of the weight and forces will be exerted.

[Para. 08] Another problem with existing keyboard systems is that they are difficult and time consuming to mount the first time and removing them and remounting them in other positions is equally complicated and time consuming. There are other systems that do allow for quick mounting and un-mounting, but these are not as rigid or secure because they have independent mounts that are not directly connected to each other through one solid mechanism.

[Para. 09] Another problem with existing keyboard positioning systems is typing while walking, or resting hands on the keyboard system while walking. This motion can cause the keyboard

surface to move, wobble, or wiggle. And as a result, this motion can then cause the table and the computer monitor to move as well. This instability is made worse and exaggerated when there are many independent parts that are connected between the keyboard surface and the ultimate mount on the desk (e.g. "lily pad" or pull-out mouse platforms). Each independent component introduces more possibility for movement at each connection point between two components due to the manufacturing tolerances introduced by each part. These tolerances at connection points (i.e. joints) provide places for two parts to be able to move relative to each other thus making the system overall more susceptible to wiggling or wobbling at those joints or connection points. The walking motion itself is cyclic and those oscillations can cause the vibrations to grow and amplify causing even more extreme movement of the keyboard (and ultimately monitor) while a person is typing. This additional movement makes typing even harder to perform.

#### Summary

[Para. 10] This invention is designed to address the described problems and is universally adjustable to be used in a walking, standing or sitting application. Some treadmill desk workstations allow for all three modalities in the same workstation. This device will reduce or eliminate pain from poor ergonomic positioning of the keyboard and mouse (or trackball) in all three modes.

[Para. 11] The iMovR™ Elevon™ Ergonomic Sit-Stand-Walk Keyboard and Peripheral Positioning System is designed to allow a keyboard to be held rigidly and securely in an ergonomically adjustable position for a person when they are sitting at a desk, standing at a desk, or walking on a treadmill in front of a desk. This system allows additional surfaces on either side (or both sides) of the keyboard surface that can independently be adjusted into a customized ergonomic position to hold a mouse, trackball, independent number pad, or other pointing devices.

#### Brief Description of the Drawings

[Para. 12] Figure 1 illustrates multiple graphical projections of an embodiment of a keyboard and peripheral mounting system.

[Para. 13] Figure 2 illustrates one of the graphical projections of Figure 1, with greater detail.

[Para. 14] Figure 3 illustrates one of the graphical projections of Figure 1, with greater detail.

[Para. 15] Figure 4 illustrates one of the graphical projections of Figure 1, with greater detail.

[Para. 16] Figure 5 illustrates one of the graphical projections of Figure 1, with greater detail.

[Para. 17] Figure 6 illustrates two of the graphical projections of Figure 1, with greater detail.

[Para. 18]

[Para. 19] Figure 7 illustrates an embodiment of a keyboard and peripheral mounting system connected to a table.

[Para. 20] Figure 8 illustrates an embodiment of a keyboard and peripheral mounting system connected to a table.

[Para. 21] Figure 9 illustrates an embodiment of a keyboard and peripheral mounting system connected to a table.

[Para. 22] Figure 10 illustrates multiple graphical projections of an embodiment of a keyboard mounting system connected to a table, wherein the table has a cutout to accommodate the keyboard mounting system.

[Para. 23] Figure 11 illustrates one of the graphical projections of Figure 10, with greater detail.

[Para. 24] Figure 12 illustrates one of the graphical projections of Figure 10, with greater detail.

[Para. 25] Figure 13 illustrates one of the graphical projections of Figure 10, with greater detail.

[Para. 26] Figure 14 illustrates one of the graphical projections of Figure 10, with greater detail.

[Para. 27] Figure 15 illustrates one of the graphical projections of Figure 10, with greater detail.

[Para. 28] Figure 16 illustrates multiple graphical projections of an embodiment of a keyboard mounting system connected to a table, wherein the table has a cutout to accommodate the keyboard mounting system and the keyboard mounting system is articulated.

[Para. 29] Figure 17 illustrates one of the graphical projections of Figure 16, with greater detail.

[Para. 30] Figure 18 illustrates one of the graphical projections of Figure 16, with greater detail.

[Para. 31] Figure 19 illustrates one of the graphical projections of Figure 16, with greater detail.

[Para. 32] Figure 20 illustrates one of the graphical projections of Figure 16, with greater detail.

[Para. 33] Figure 21 illustrates one of the graphical projections of Figure 16, with greater detail.

[Para. 34] Figure 22 illustrates isolated components of the keyboard and peripheral mounting system illustrated in Figure 1.

[Para. 35] Figure 23 illustrates isolated components of the keyboard and peripheral mounting system illustrated in Figure 1.

[Para. 36] Figure 24 illustrates isolated components of the keyboard and peripheral mounting system illustrated in Figure 1.

[Para. 37] Figure 25 illustrates isolated components of the keyboard and peripheral mounting system illustrated in Figure 1.

[Para. 38] Figure 26 illustrates isolated components of the keyboard and peripheral mounting system illustrated in Figure 1.

[Para. 39] Figure 27 illustrates isolated components of the keyboard and peripheral mounting system illustrated in Figure 1.

[Para. 40] Figure 28 illustrates isolated components of the keyboard and peripheral mounting system illustrated in Figure 1.

[Para. 41] Figure 29 illustrates isolated components of the keyboard and peripheral mounting system illustrated in Figure 1.

[Para. 42] Figure 30 illustrates isolated components of the keyboard and peripheral mounting system illustrated in Figure 1.

[Para. 43] Figure 31 illustrates isolated components of the keyboard and peripheral mounting system illustrated in Figure 1.

[Para. 44] Figure 32 illustrates isolated components of the keyboard and peripheral mounting system illustrated in Figure 1.

[Para. 45] Figure 33 illustrates isolated components of the keyboard and peripheral mounting system illustrated in Figure 1.

#### Detailed Description

[Para. 46] The purpose of tilting the keyboard up is to create a more neutral position for the arms and hands of the users in order to reduce or prevent this occurrence.

[Para. 47] In order to maintain a proper ergonomic position – i.e. keep the arms and hands in as neutral a position as possible – the keyboard should be mounted at a much steeper angle

than for desktop use. This could be anywhere from 20 to 60 degrees off the desktop plane. Using a keyboard when on a treadmill desk requires steeper angles than when sitting or standing due to the fact that the belt is constantly pulling the user backwards, causing them to press down harder on their palms in order to maintain hand position on the keyboard and typing accuracy. Lacking steeper angles users eventually develop muscle strain in the neck and shoulders from maintaining hard downward pressure for extended periods. By working at a steeper angle this pressure is alleviated, resulting in the ability to type more accurately and faster typing speeds and treadmill belt speeds, plus reduced muscle strain.

[Para. 48] The first component of the invention is a single solid mounting frame. This frame is designed as a single piece to create the most rigid and secure system. This mounting frame has knobs that can be tightened and untightened quickly (no tools are needed) to securely fasten the frame to the table by creating a strong clamping force that holds a wide flat lip or plate against the top edge of the table. The large surface area of this plate provides significant friction between the top of the table which results in an extremely strong and rigid connection. The plate can optionally have a padded interior surface to protect the desk that from scratches and provide an even stronger grip.

[Para. 49] The frame has arms that extend backward under the table. These arms provide several benefits. While attaching the frame, before it is tightened on, it keeps the front part of the frame including the keyboard and peripheral surfaces from swinging down and sliding forward off the desk. Instead, the arms that extend backward keep the frame in an upright position. Once the frame is attached and tightened to the table, these arms provide a secure counter lever that extends back from the edge to the center of the desk it is attached to. This causes any downward forces on the keyboard surface or peripheral surfaces on the front of the frame to be transferred to upward forces on the back end of the lever arm directly to the table top close to the center of gravity of the table. This is because the front lip/plate that attaches to the table top acts like the center of the lever. This results in a very strong and rigid mounting of the frame. This direct transfer does not introduce additional wiggle or wobble since it is one solid part. It is not multiple parts that could have additional room to wiggle or potentially fail to



hold together under significant forces such as if someone walking on a treadmill while typing stumbles and puts the majority of their body weight on the frame.

[Para. 50] An additional benefit of the arms that extend backward under the table and the lip/plate that attaches in the front is that together they allow the frame to be mounted on a table top when the front underside edge is not entirely flat. Some desktops have frame members (or other obstructions) that are close to the front edge of the table top. This obstruction prevents other keyboard mounting systems being used in these scenarios. Most adjustable-height desks have crossbars that block this installation of conventional keyboard trays. This frame mechanism requires a relatively shallow freeboard between the user edge of the desk and the crossbar, allowing it to be mounted universally to almost any kind of desk, many more than any other keyboard tray design.

[Para. 51] Another component of this system is the keyboard surface and how it mounts to the frame. The frame has a single rod or axle that the keyboard surface attaches to via mounting clamps. The mounting clamps provide the ability to mount the surface at any latitudinal angle. This complete adjustability allows any ergonomic angle to be achieved. This angle can be adjusted correctly for an individual, whether a person is sitting, standing, or walking at their desk. Another benefit of the surface and frame connection is that the axle, which is part of the single solid frame, extends entirely under the keyboard surface. All forces from someone pushing on the keyboard surface are conveyed directly downward on to the frame. Other systems have less secure and less strong connection points on the side of the keyboard surface. The other systems do not allow for the complete adjustability of the angle. Most other systems are limited in potential tilt angle of the keyboard platform by obstruction of the arm that connects them to the desk. And the mechanism for keeping the angle in place in the other systems does not have as much surface area for friction to hold the angle in place. Another embodiment of this would be instead of an axle or rod that would allow continuous adjustments, there may be a different a bar (rectangular or other polygon or grooved shape) combined with a corresponding clamp, which would allow for continuous or a finite number of adjustable positions.

[Para. 52] An additional aspect of the clamps that attach the keyboard surface to the axle are the number of clamps. In the Figure 2, two clamps are shown attaching the keyboard surface to the axle. This provides a very stable rigid connection point. Any number of clamps could be used. Another variant of this would be to have one clamp in the center of the keyboard surface and two supports on either end of the surface. A support keeps the keyboard surface a specific distance away from the axle. An example of would be half a clamp, but other variants are possible to achieve the same result. These supports provide a resting point for the ends of the keyboard tray to rest directly on the axle without requiring anything on the other side of the axle to hold it. This mechanism maintains the benefits of a strong rigid connection point of the first system. The additional benefit of this is that there is less apparatus under the tray that can get in the way of a person's knees or thighs when they are using the keyboard tray in the sitting position. The one clamp that is used in the center position in this scenario is located between a person's legs where there is more room, rather than in a position above the person's thighs.

[Para. 53] Another component that is attached to the keyboard surface are pegs (or in other instances an adjustable fence or plate) that holds the keyboard in place so that it does not slide off the back end of the keyboard surface when the keyboard is at a significantly steep angle for holding the keyboard in the standing or walking position. In addition, these pegs are adjustable so that they can be positioned as far forward or backward as needed to hold the keyboard forward on the surface at the desired distance from the front edge. As a result, the front of the keyboard can be positioned to hold an optional standard ergonomic wrist pad if desired.

[Para. 54] The keyboard system also has a rear fence along the back edge of the keyboard surface to further prevent anything from sliding off the back edge of the surface. Additional items, like a pencil and pen can be kept on the surface without sliding off the back edge. This fence has the additional feature that it has one or more slots to hold the cable (commonly a USB or PS2 cable) that is used to connect the keyboard with a computer. This keeps the cable neatly tucked away and holds it in place so it does not get tangled up with other components.

[Para. 55] Another aspect of the system is an extension to the mounting frame and the addition of peripheral surfaces on the left and right sides of the keyboard surface. The frame would have similar rod, axle, or bar that extends to the sides of the frame (see illustrations).

The key aspect of this is that this rod is at an angle to the keyboard axle. In an embodiment, the angle is, for example, 45 degrees. This angle may be optimized in other instances for the correct ergonomic positions. By these rods turning, for example, 45 degrees towards the user, the side surfaces are able to effectively be closer to the body of the person using the system. This reduces the distance that a person has to reach to the side a peripheral on the side surface such as a mouse or trackball. This allows a better ergonomic position to be achieved, by allowing the user to use their pointing device (mouse, trackball, trackpad or other) without any pronation, supination, flexion or extension of the wrists.

[Para. 56] Additionally, the side surface mounts to the axle with a mechanism similar to that described above for the keyboard platform, allowing any angle of incline of the surface to be achieved. Another important part of this invention is that this adjustment is completely independent of the adjustment of the angle of the keyboard surface. As a result, these angles can be optimized for the desired ergonomics independently of the keyboard angle and of each other. Adjusting one does not require the user to re-adjust the other. Existing keyboard positioning systems do not have independent adjustments that don't affect each other. When you adjust the keyboard angle, they end up adjusting the peripheral surface angle as well since the two are tied together.

[Para. 57] Similar to the keyboard surface, the peripheral surface has a rear fence on the back edges of the surface to keep items from rolling off the back edge. It also has slots in the back fence to allow for cable management to keep cables neat and from getting tangled up.

[Para. 58] The peripheral surface also has movable pegs (or fences or plates) for keeping a mouse or trackball at the appropriate position on the surface. In the case of a mouse (or similar other pointing devices) which a person is moving relative to the surface, when you let go of the mouse, you do not want it to slide all the way to the back edge of the surface (or off the back of there was no back fence either). If it did, then you would have to reach further away to resume using the device. So the pegs are able to be positioned on the surface to allow the mouse to slide only a short distance away from the primary mousing area. In the case of a trackball, the user can position the pegs so the trackball is as close towards the front edge of the peripheral

surface as a person would want it, as to minimize how far a person would have to reach forward, thus allowing for a better ergonomic adjustment.

[Para. 59] An additional variation of this invention is where the keyboard surface and axle mounting bar are mounted inside the outer dimensions of a desktop surface in an area cutout from the desktop. In addition to all the benefits of keyboard mounting system previously described, this brings the overall center of gravity closer to the center of the desk, resulting in less movement of the desktop when forces are exerted on the keyboard positioning system. Also, the shape of the cutout has angled edges (the omega shape) which allow for the person's body to easily get closer to the table and reach a mouse or trackball in those locations on the table.

[Para. 60] Additionally, in those locations, there would be an optional individually positionable platform at preset or adjustable angles that would be made up of the peripheral surface with adjustable pegs and rear fences. These platforms could be independent from the desktop or integrated with the desktop.

[Para. 61] This disclosure comprises at least the following:

[Para. 62] An angle adjustable surface that securely holds any commonly used computer keyboards.

[Para. 63] A ergonomically optimum fixed angle surface for above purpose.

[Para. 64] Additional surfaces on either side of the keyboard surface for proper positioning of peripheral devices such as mouse controllers or track-ball devices, whether wire-tethered or wireless. Such surfaces to be hinged in line with the front of the keyboard so that they may be set to level position (for using a mouse) when the keyboard is tilted up.

[Para. 65] Surfaces for peripheral devices described above that are independently adjustable for optimum positioning and for keeping these devices from sliding off the platform at steep angles.

[Para. 66] Surfaces such as the above that are fixed.

[Para. 67] Keyboard and peripheral device surfaces as noted above that are placed upon or attached to any of the typically available desk surfaces used for working while walking on exercise treadmills.

[Para. 68] Keyboard and peripheral device surfaces as noted above that are integrated into a desk used for working while walking on exercise treadmills.

[Para. 69] Keyboard and peripheral device surfaces as noted above that are integrated into a device which is composed of an integral treadmill/work surface.

[Para. 70] Provision for securing the keyboard and/or peripheral devices to the above mentioned surfaces and/or devices including but not limited to positionable “backstop” raised fences or pegs, high friction materials attached to either the surfaces or keyboard/peripheral devices.

[Para. 71] Provision for the integration or application of any materials used for resting the hands/wrists, either for keyboarding or peripheral device use.

[Para. 72] Provision for integrating adjustability and/or features noted above into the keyboard itself, or the peripheral devices.

[Para. 73] Mounting frame that allows for quick and easy mounting and dismounting of system.

[Para. 74] Mounting frame that avoids obstructions on the front edge of a desktop surface such as a structural frame component of the desk, a drawer, etc.

Claims

Claim 1. A keyboard positioning system.

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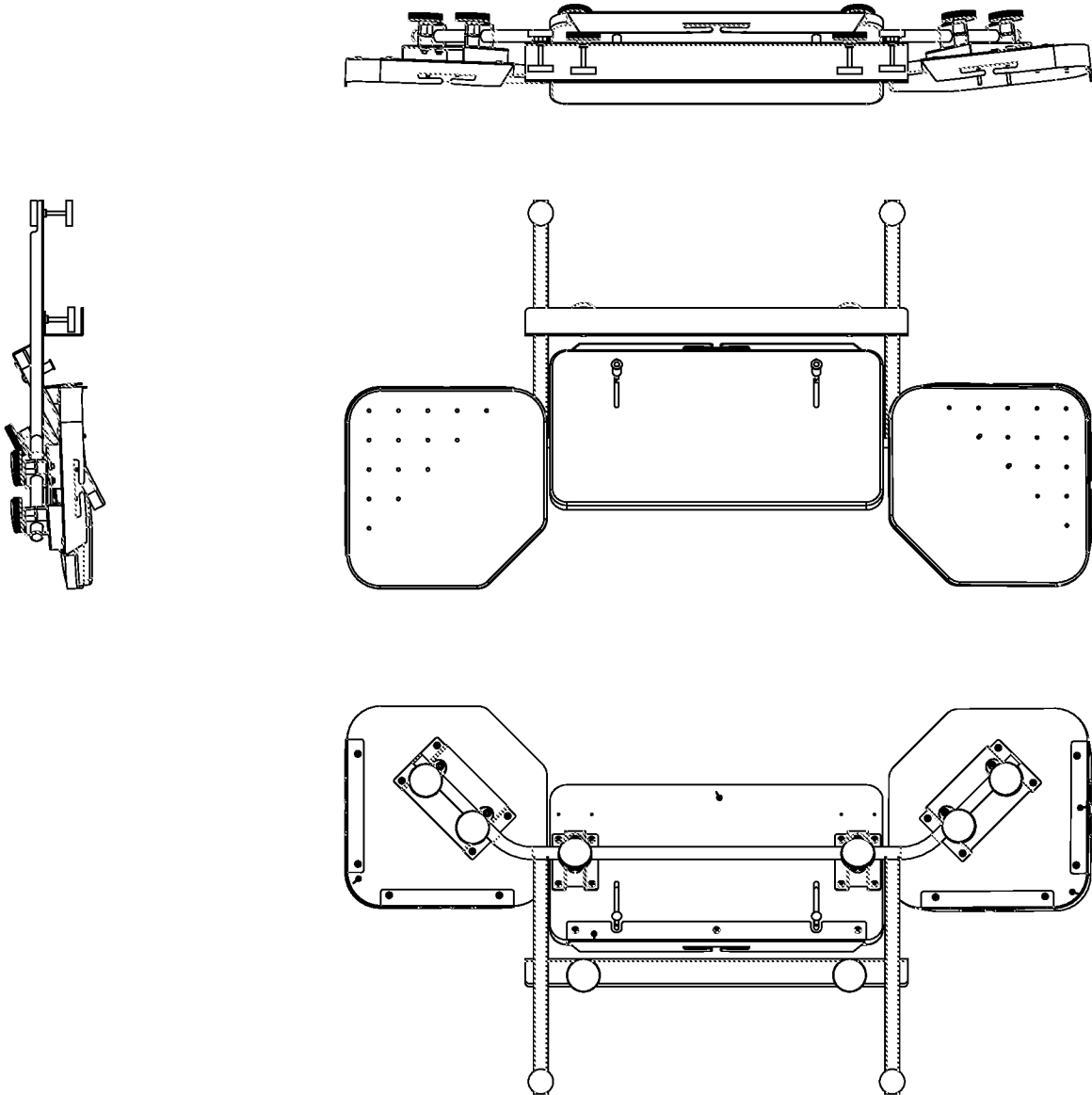


FIG.1A

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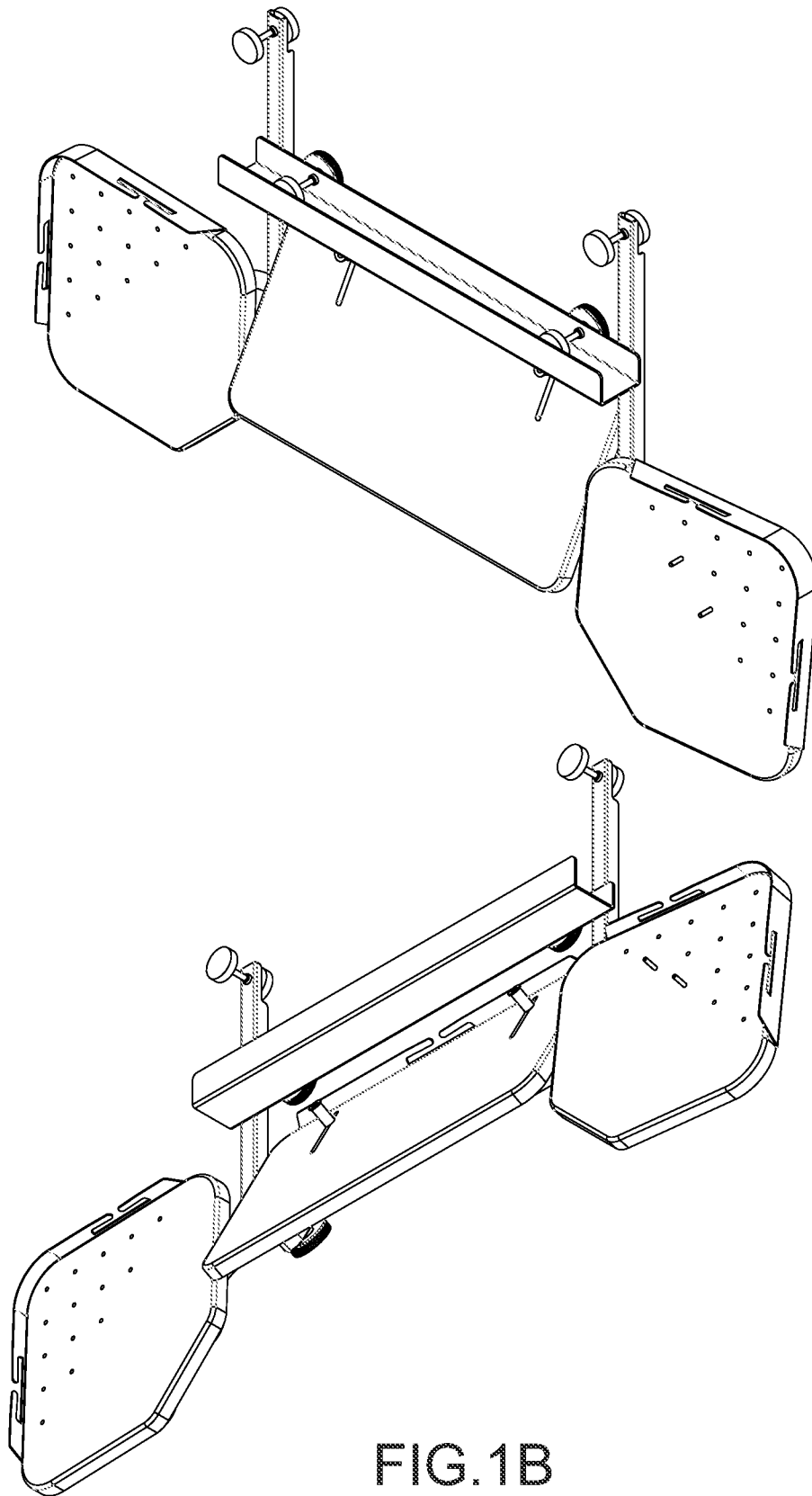


FIG.1B



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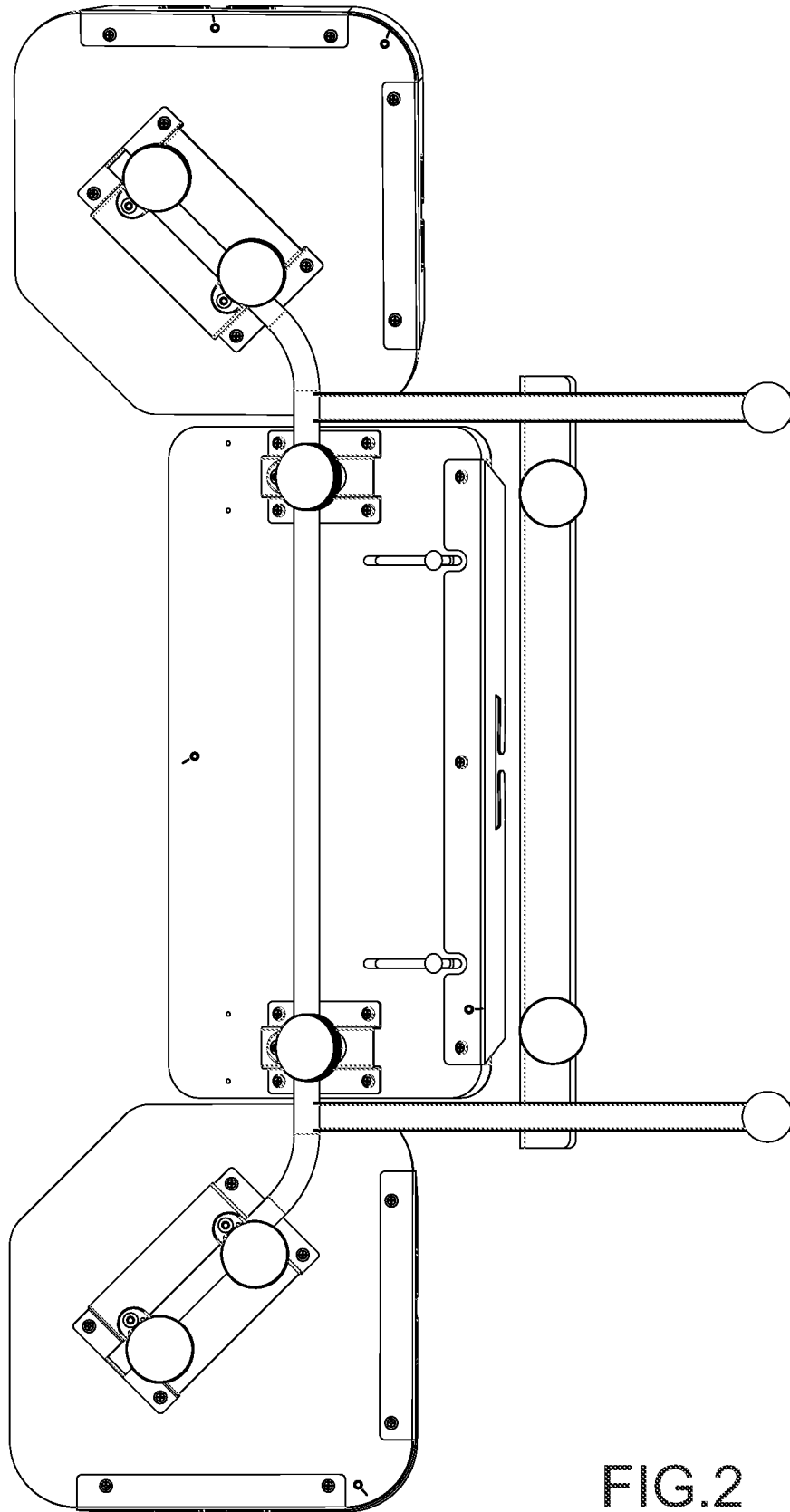


FIG.2

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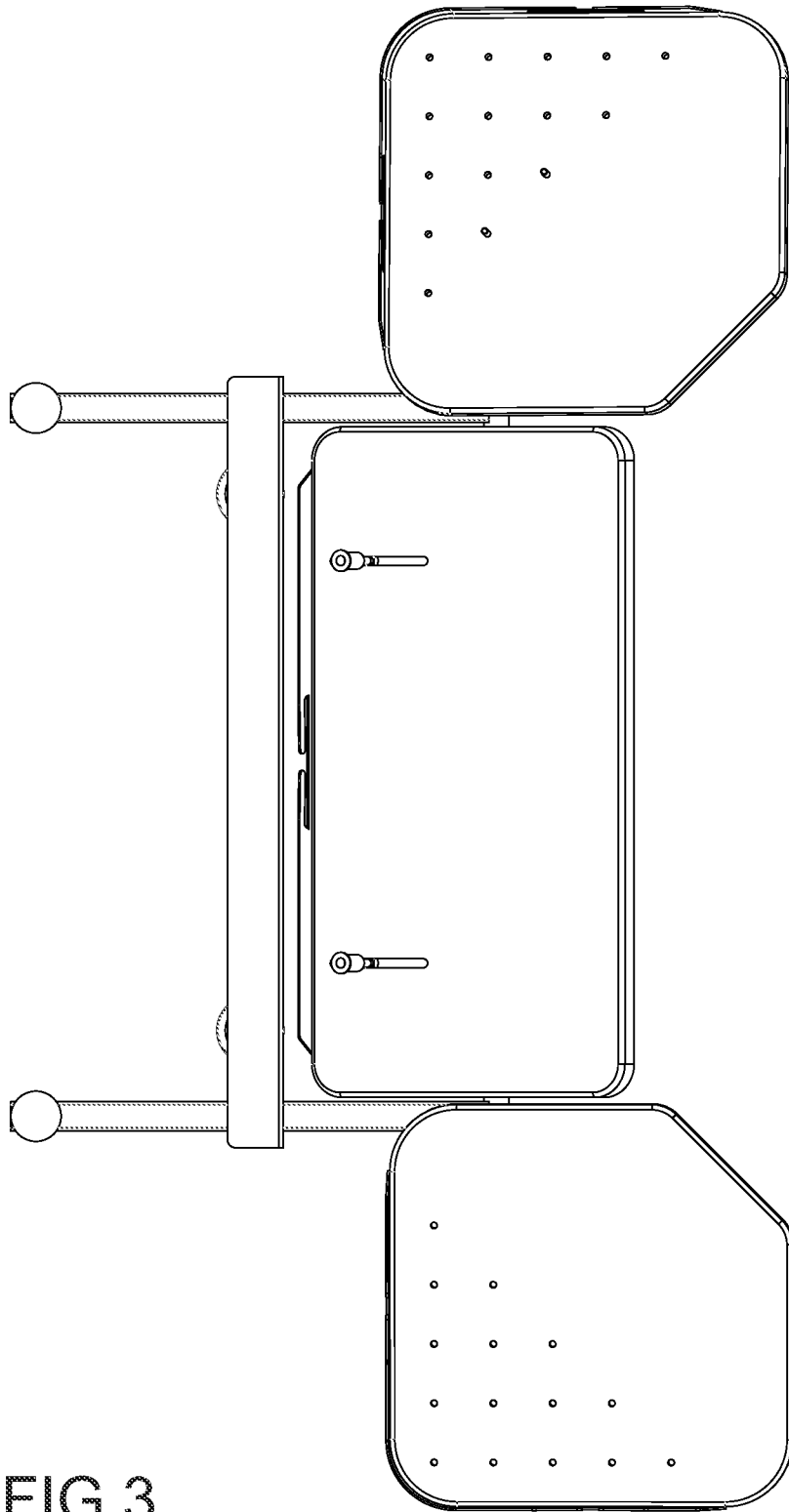


FIG.3

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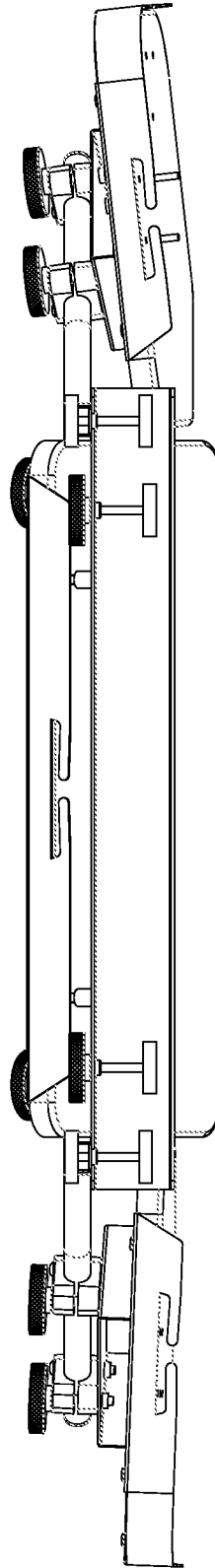


FIG.4

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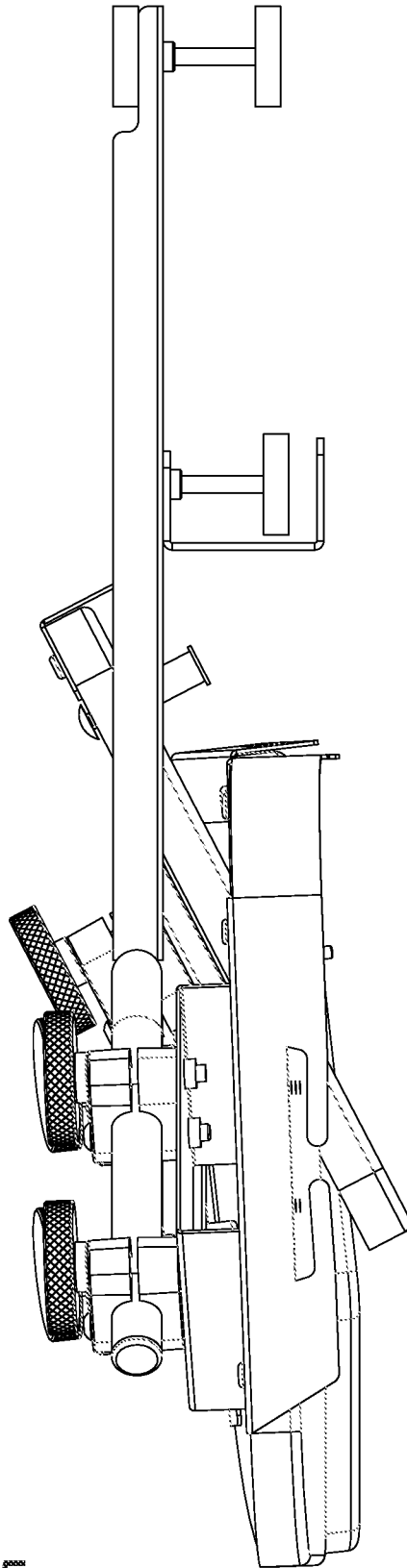


FIG.5

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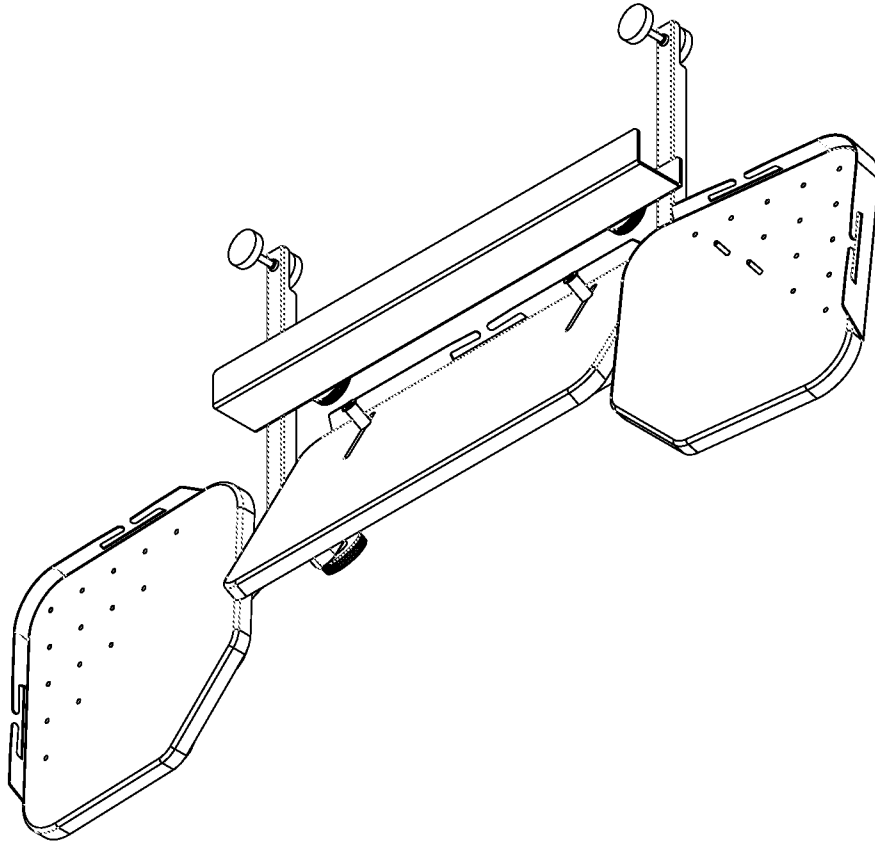


FIG.6A

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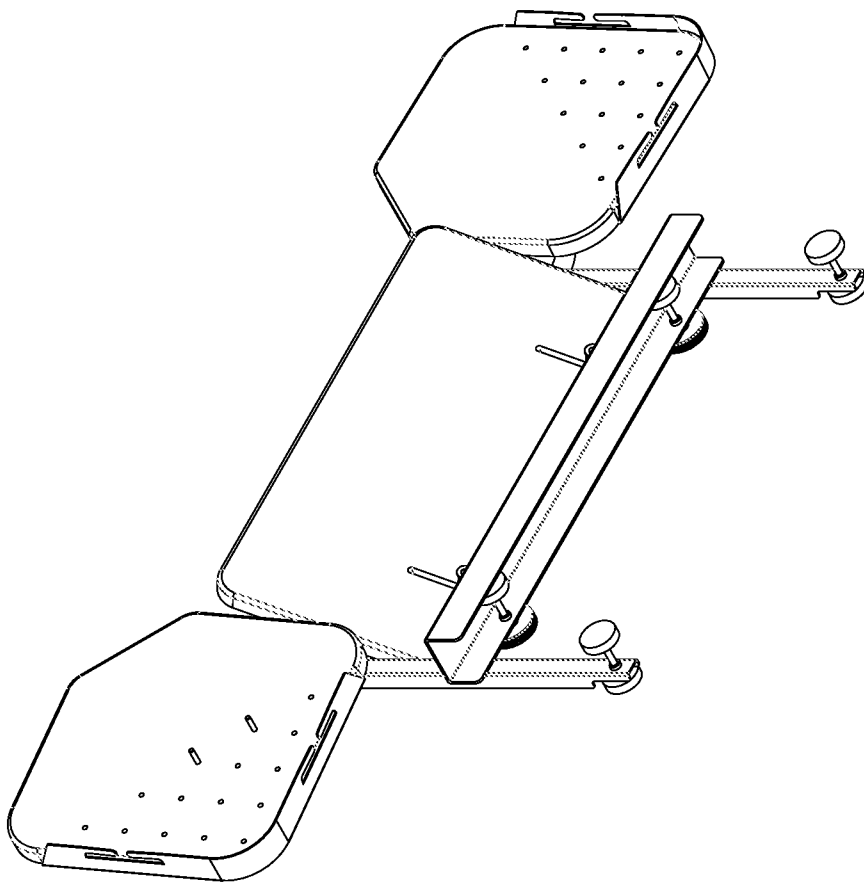


FIG.6B

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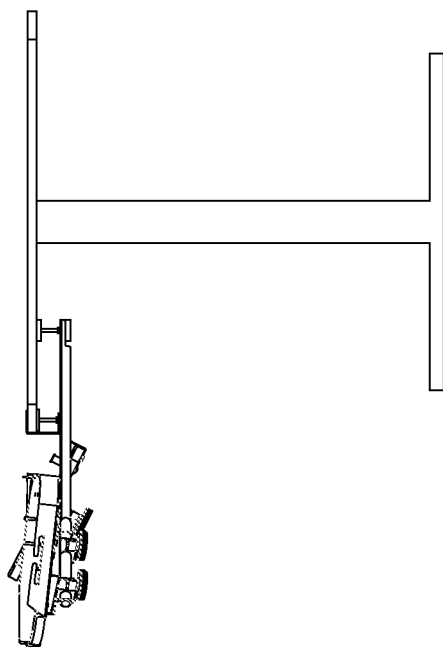
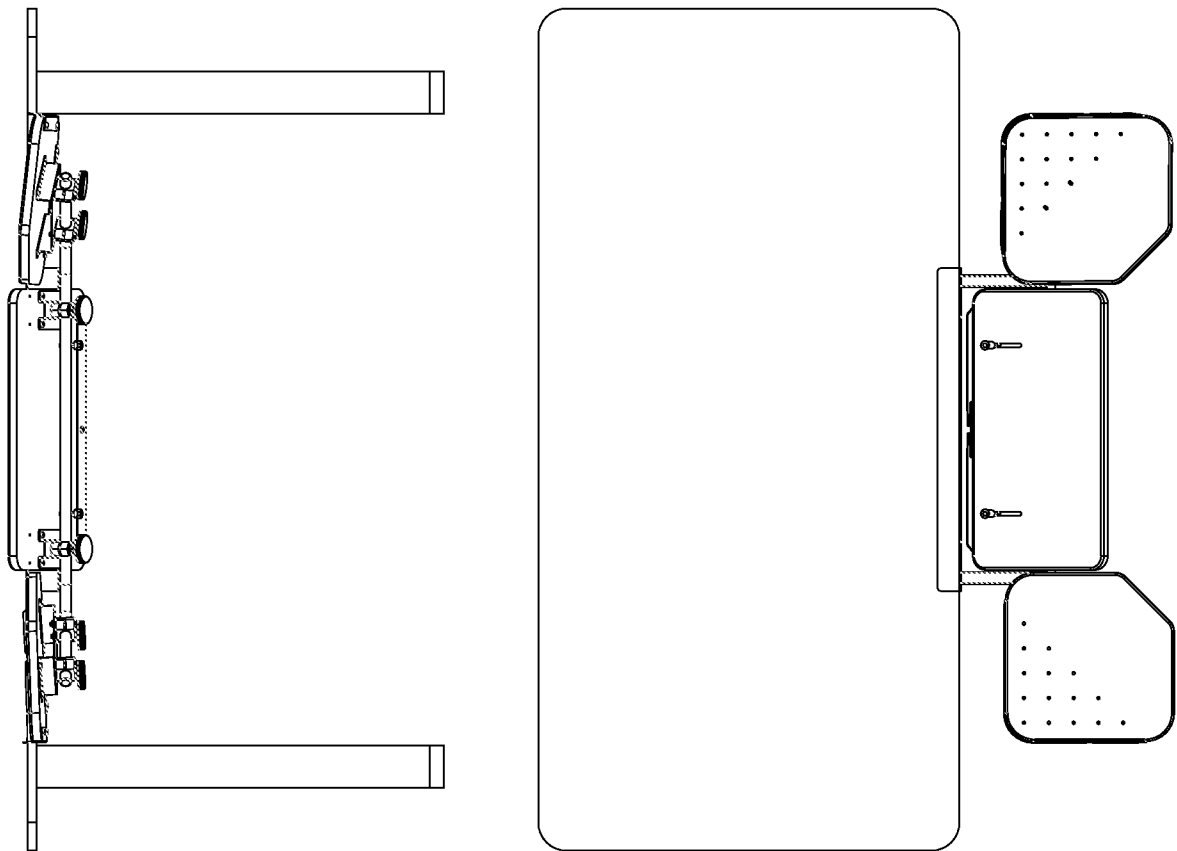


FIG.7A

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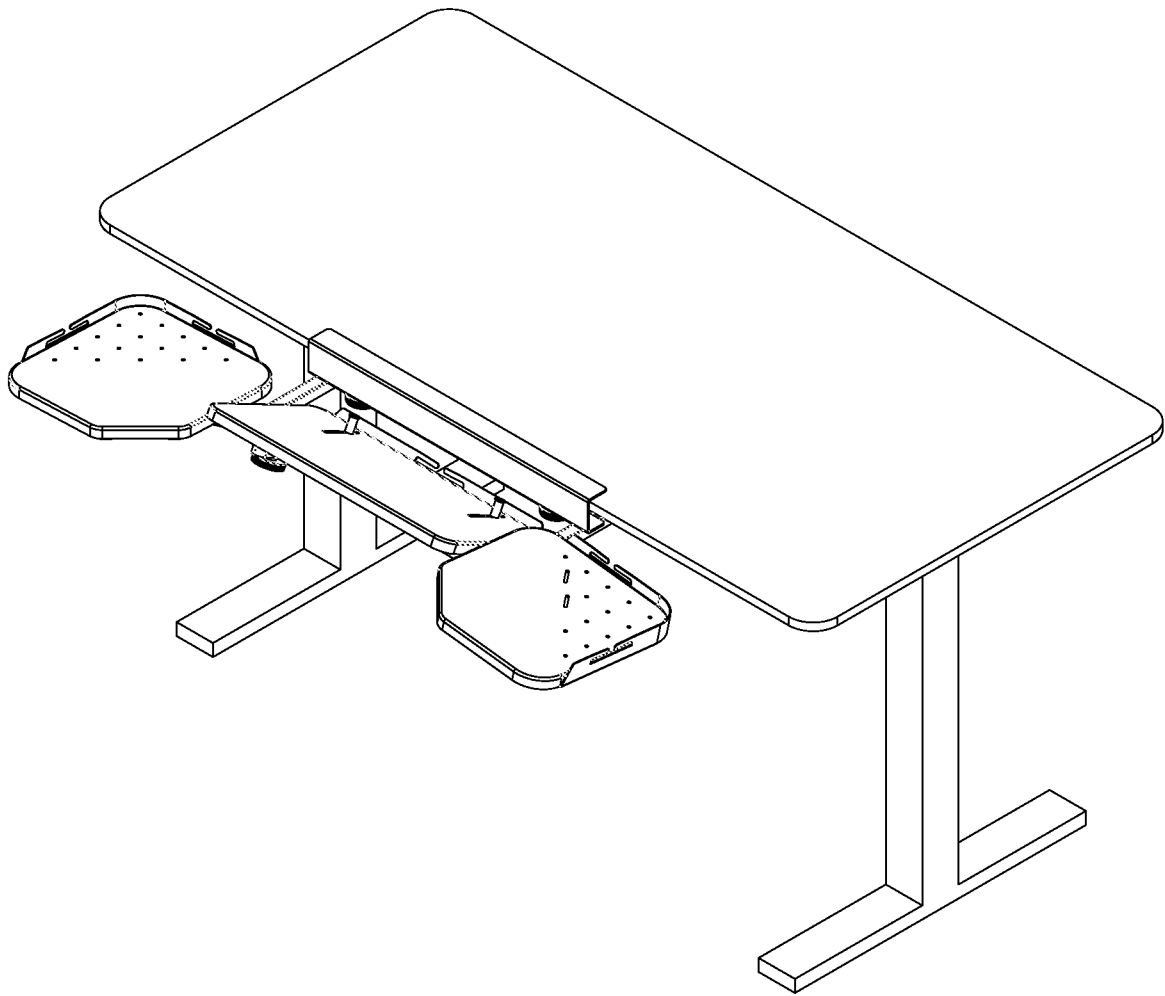


FIG.7B



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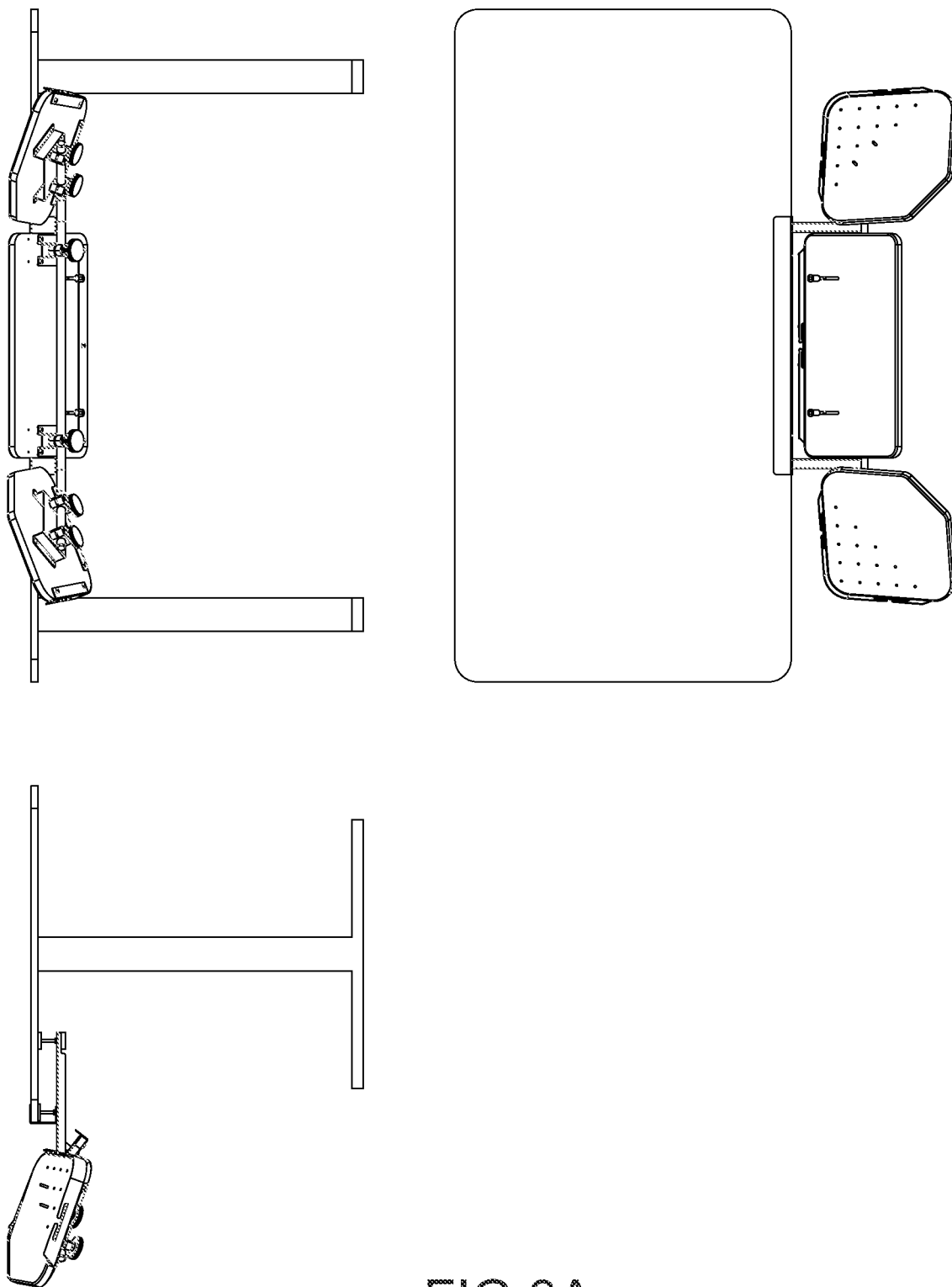


FIG.8A

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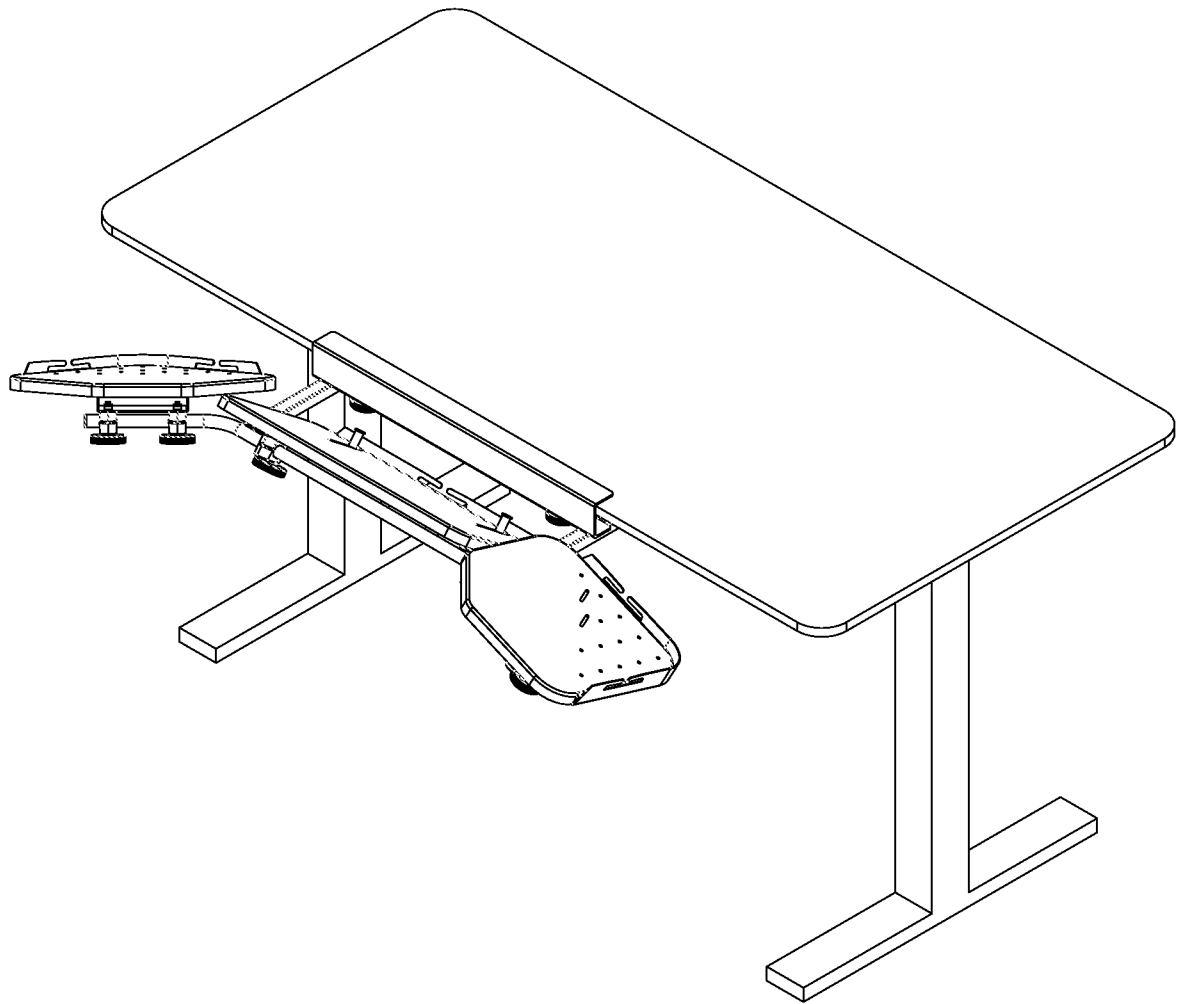


FIG.8B

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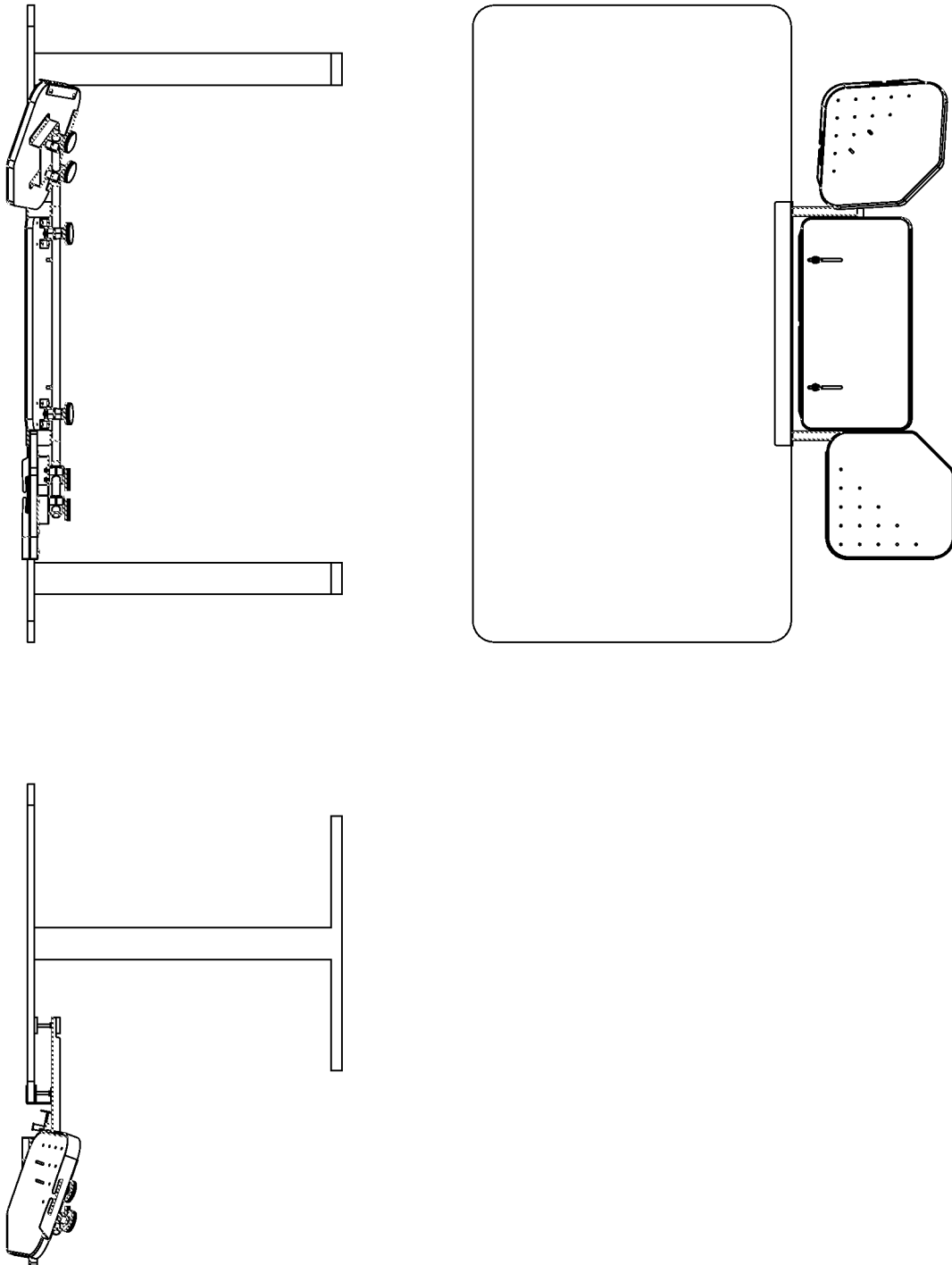


FIG.9A

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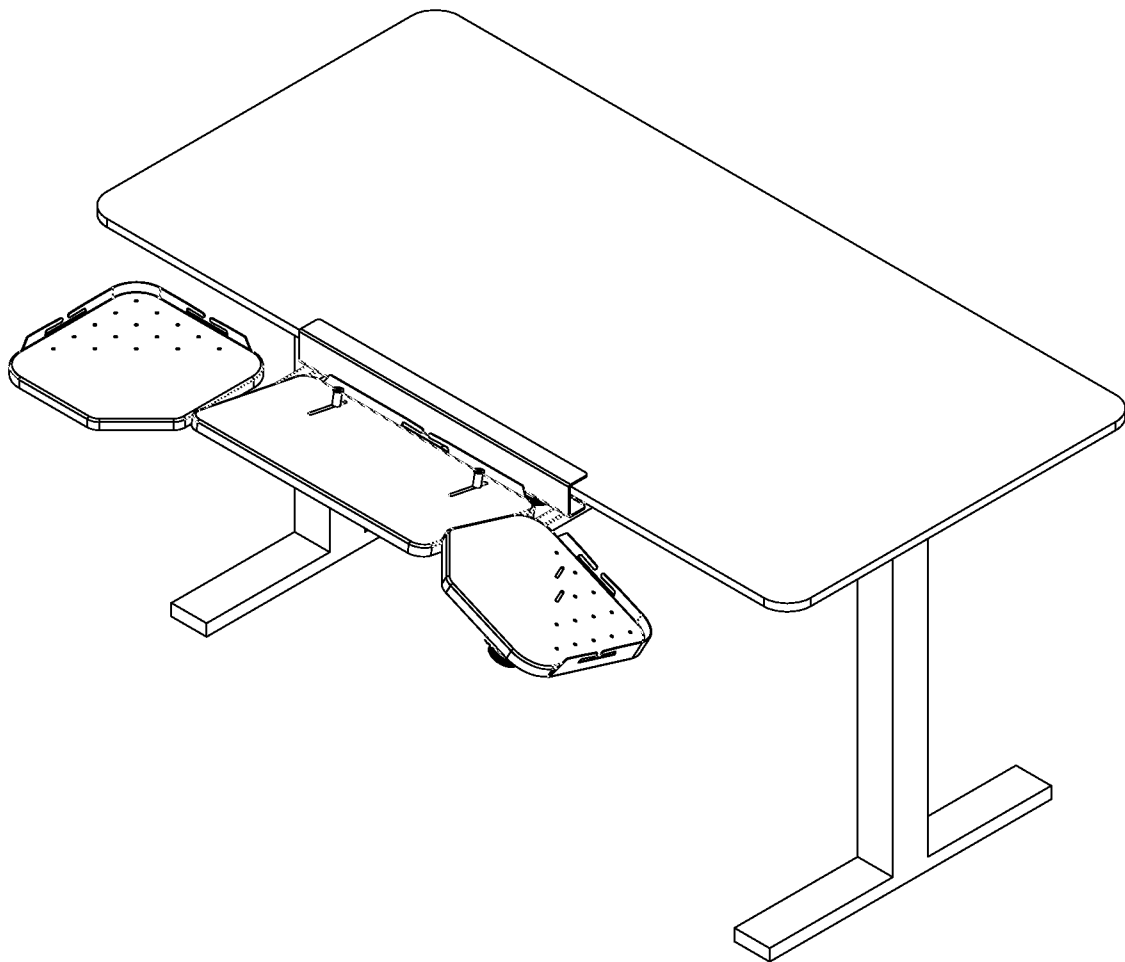


FIG.9B

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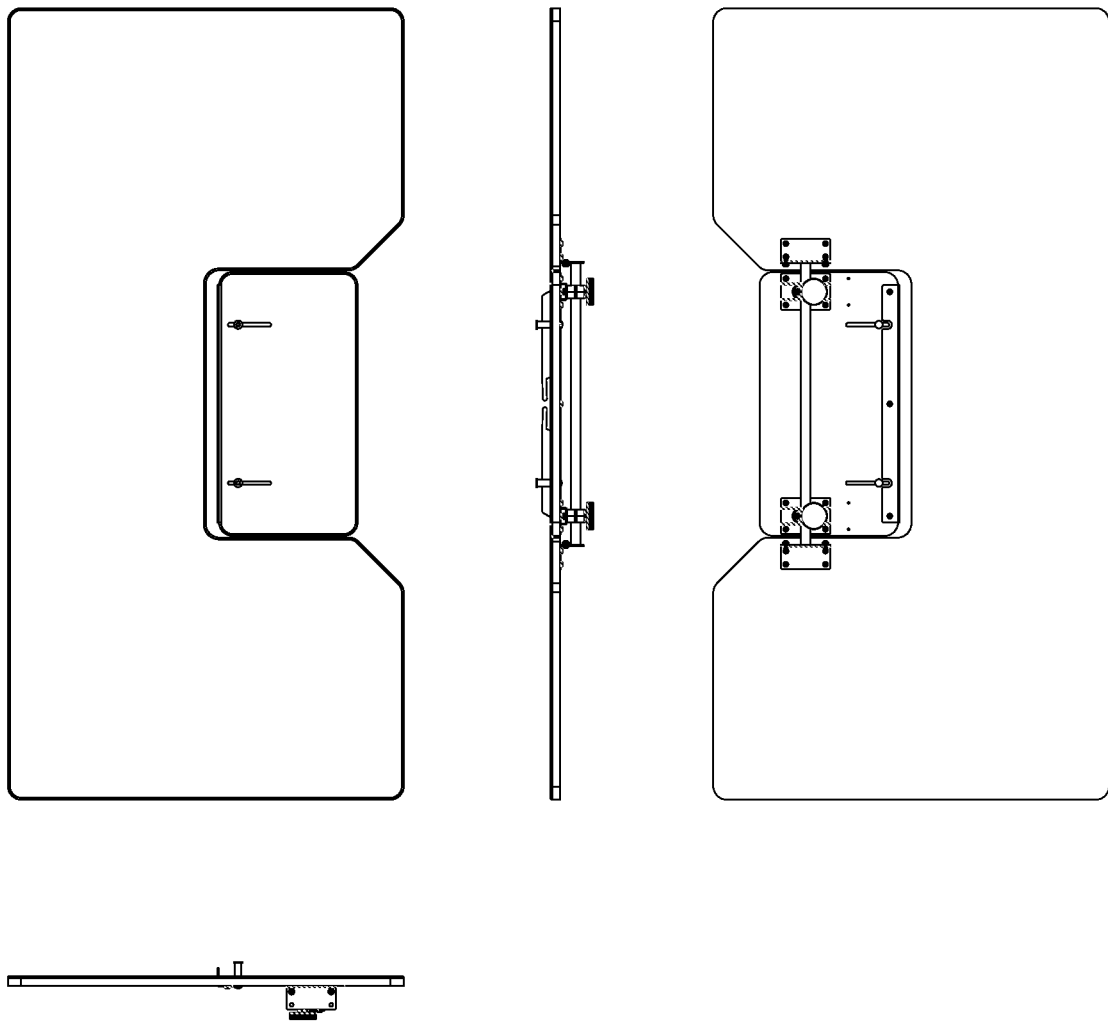


FIG.10A

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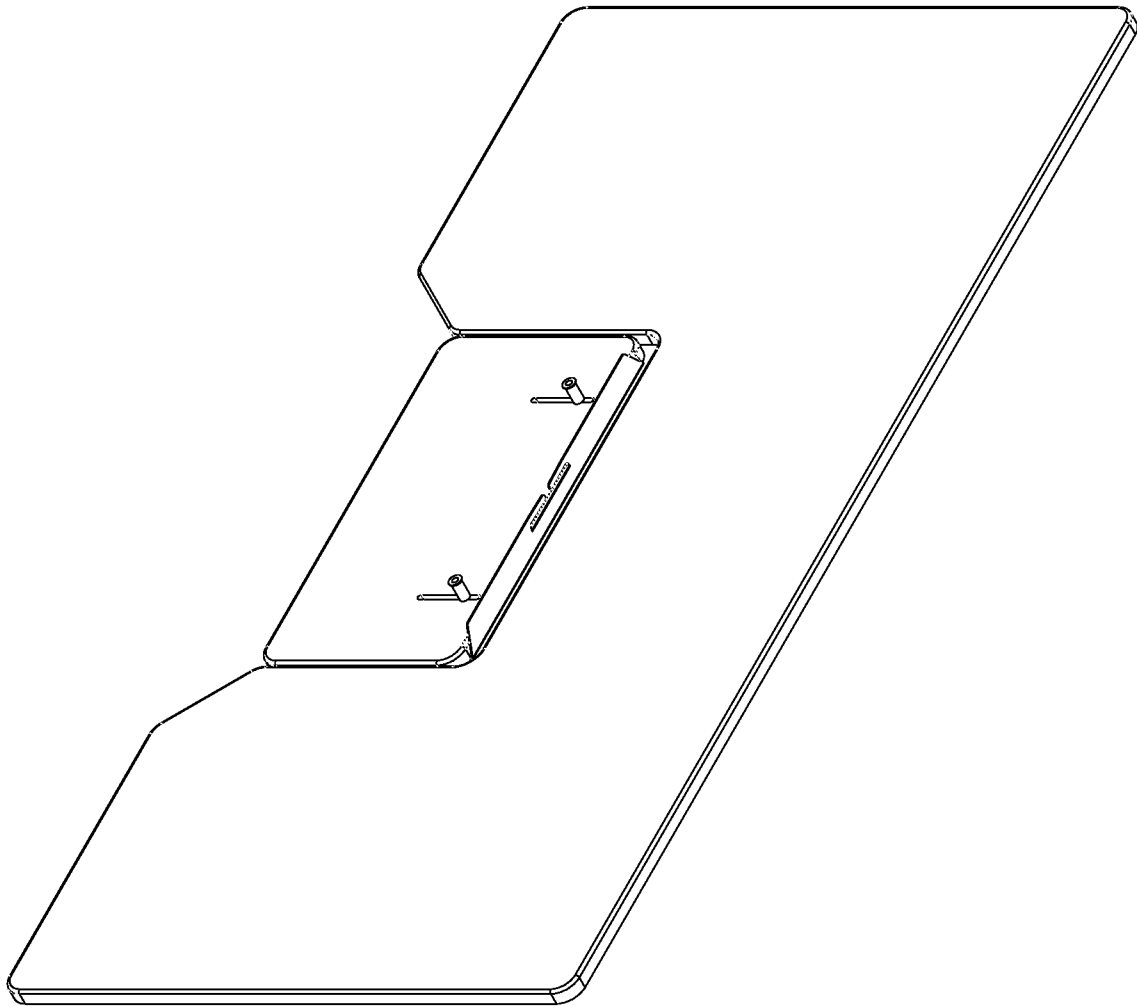


FIG.10B

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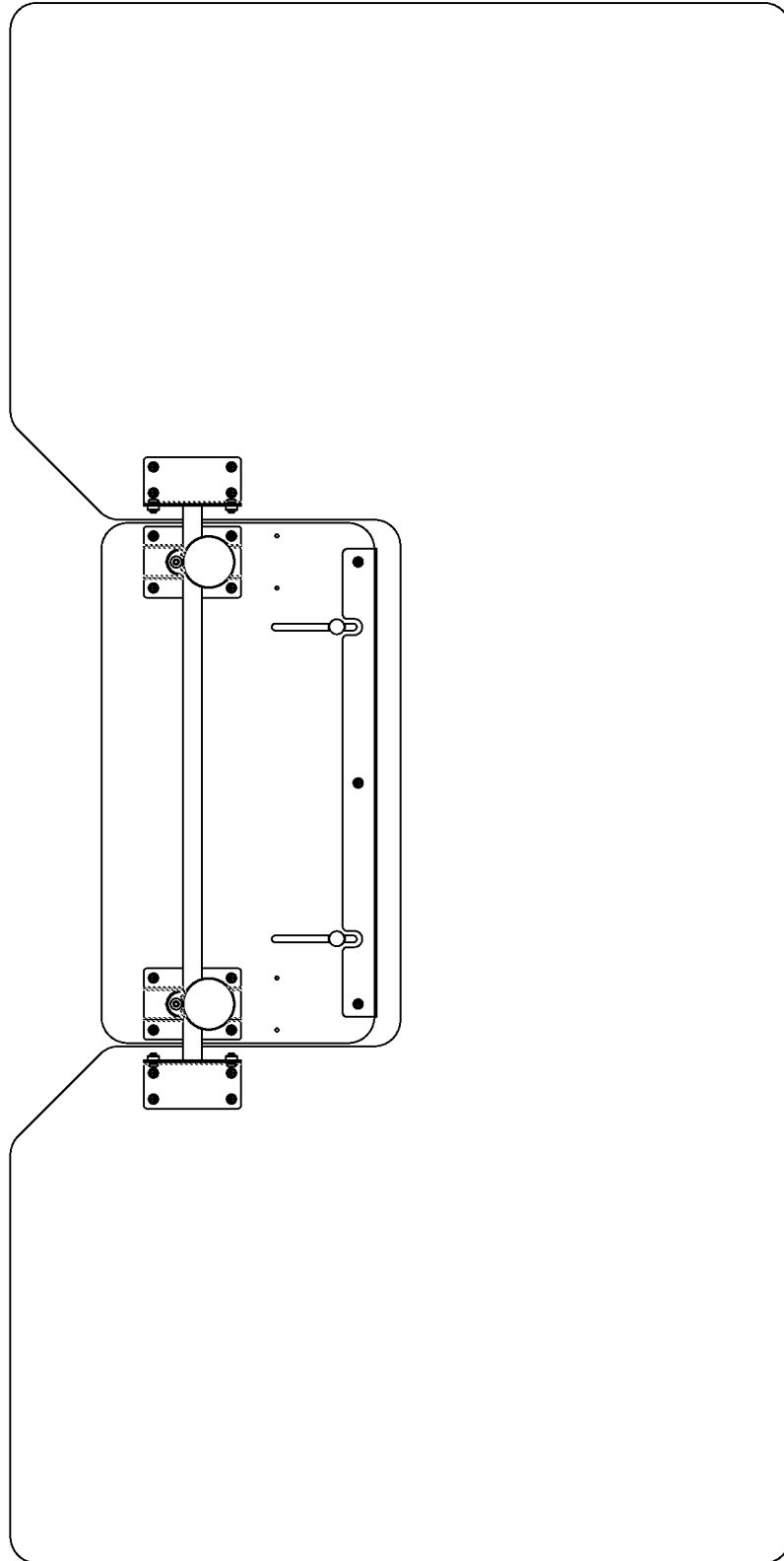


FIG. 11

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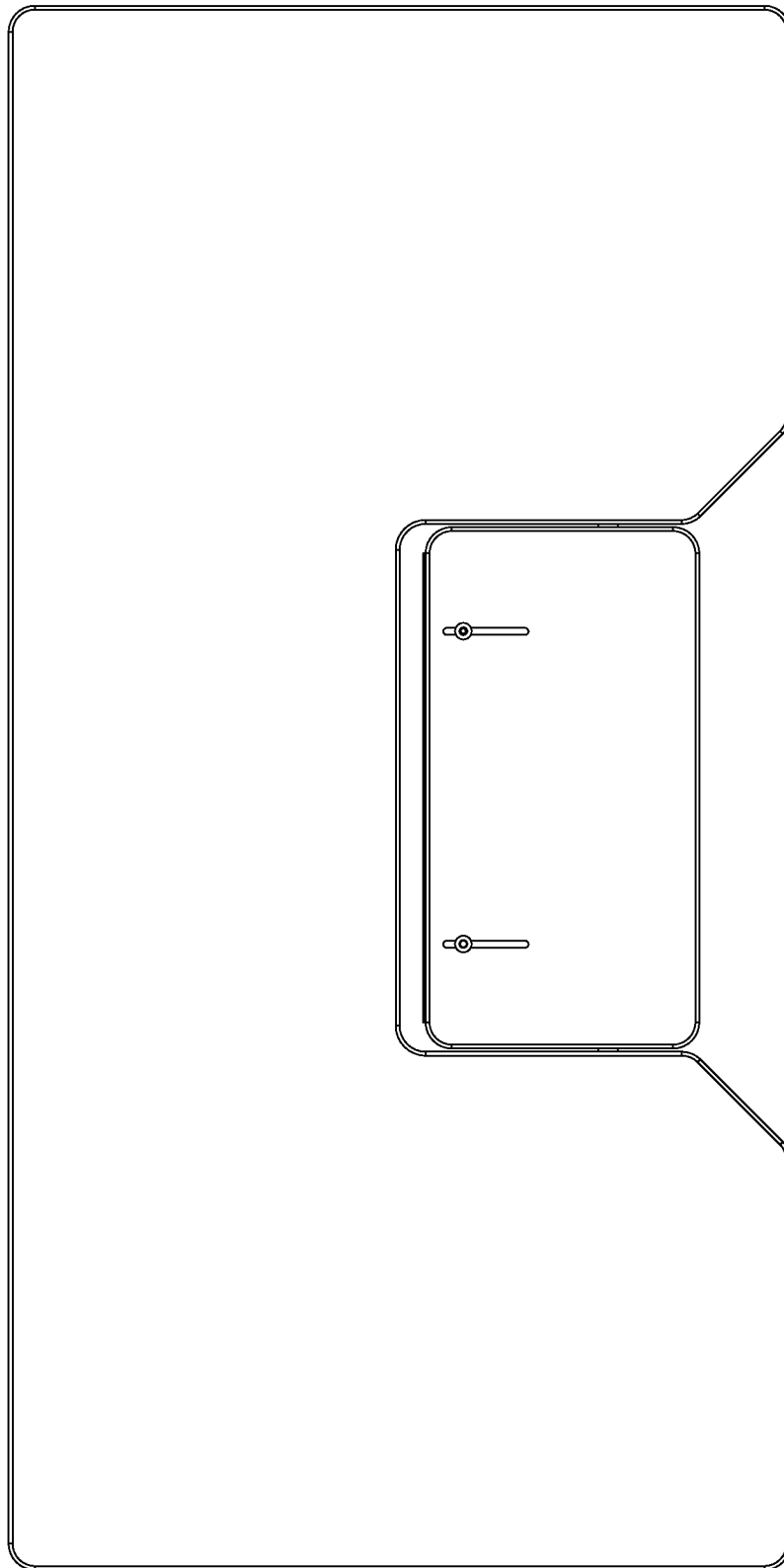


FIG.12



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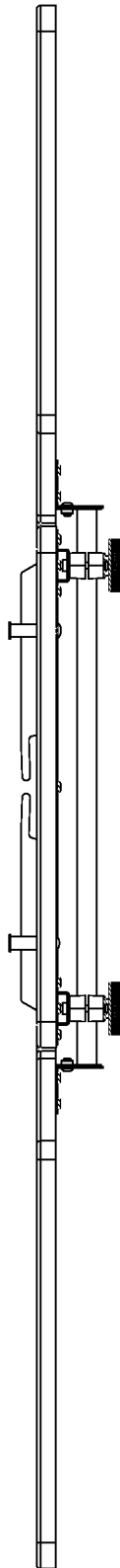


FIG. 13

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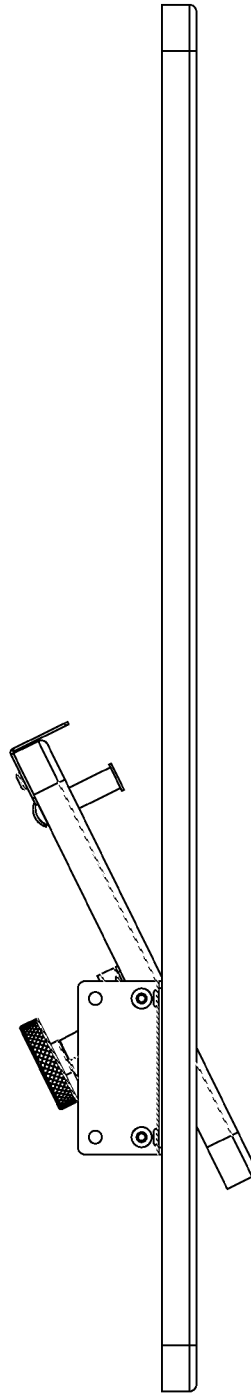


FIG.14

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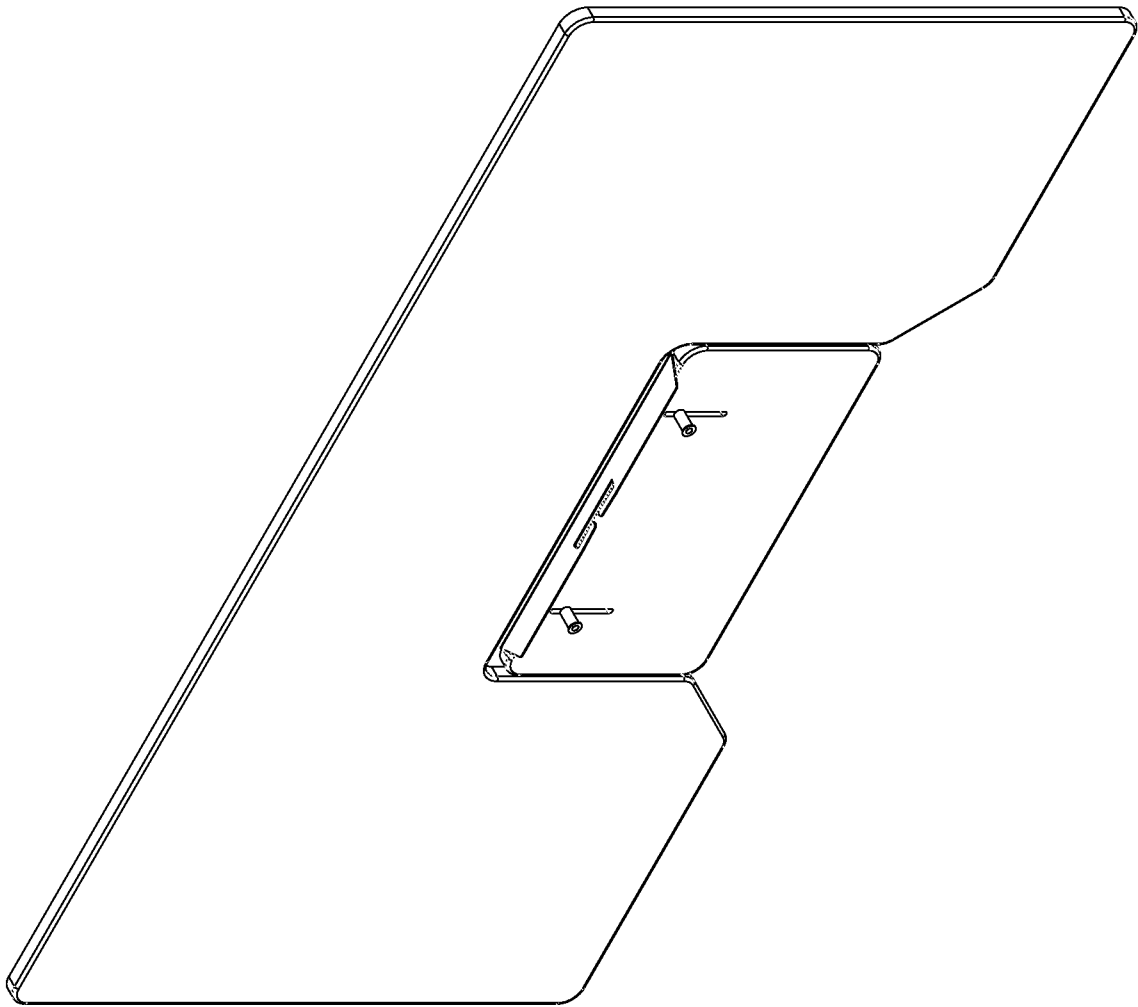


FIG.15

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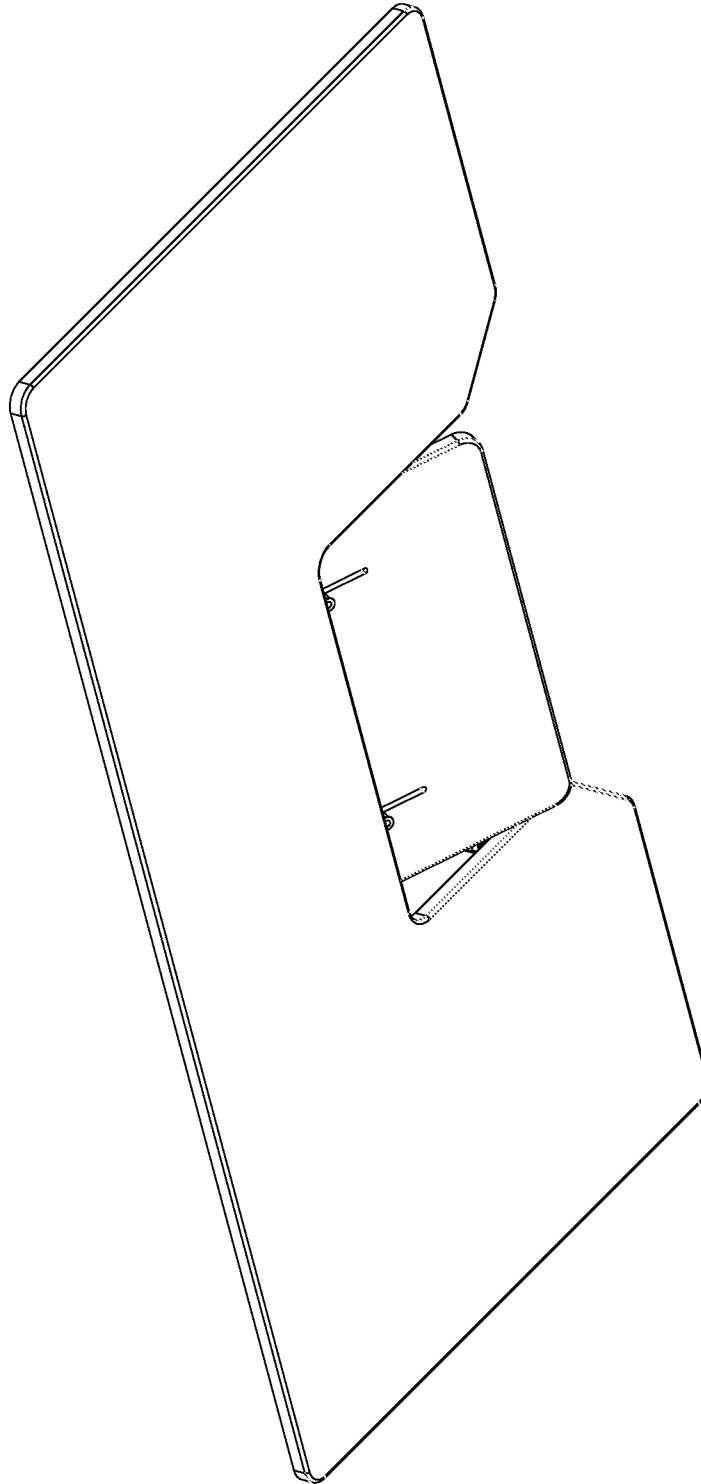


FIG. 16A

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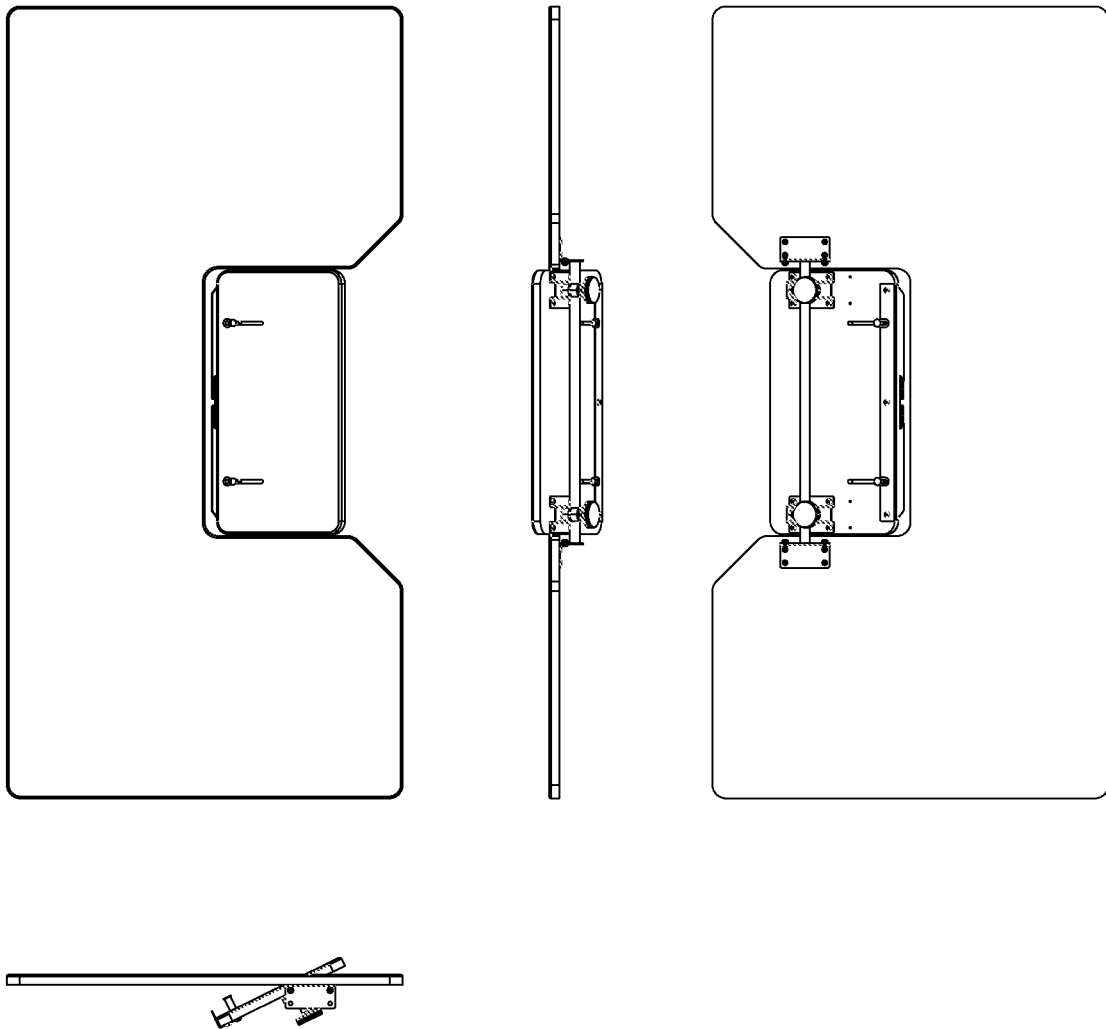


FIG. 16B

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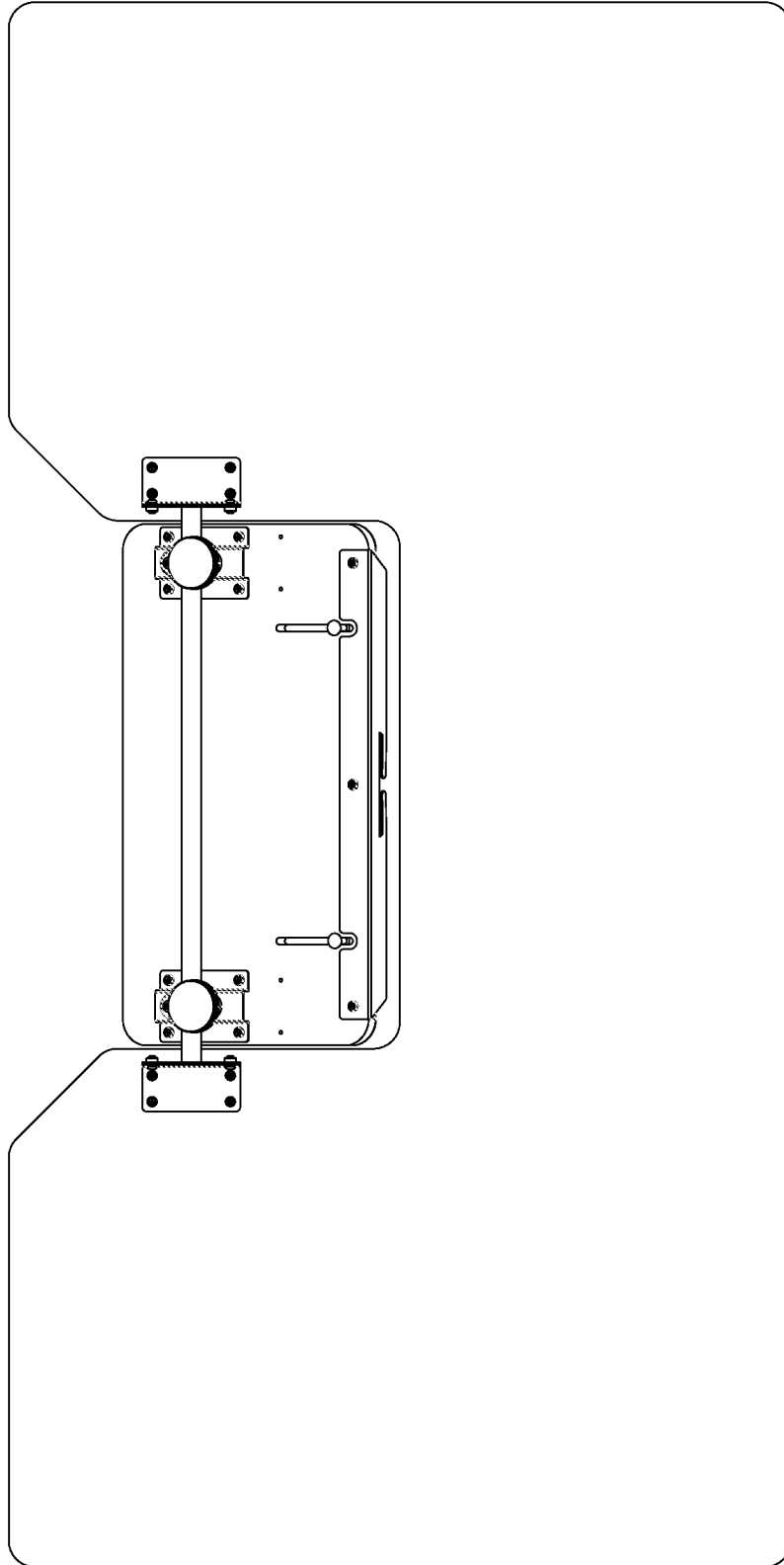


FIG.17

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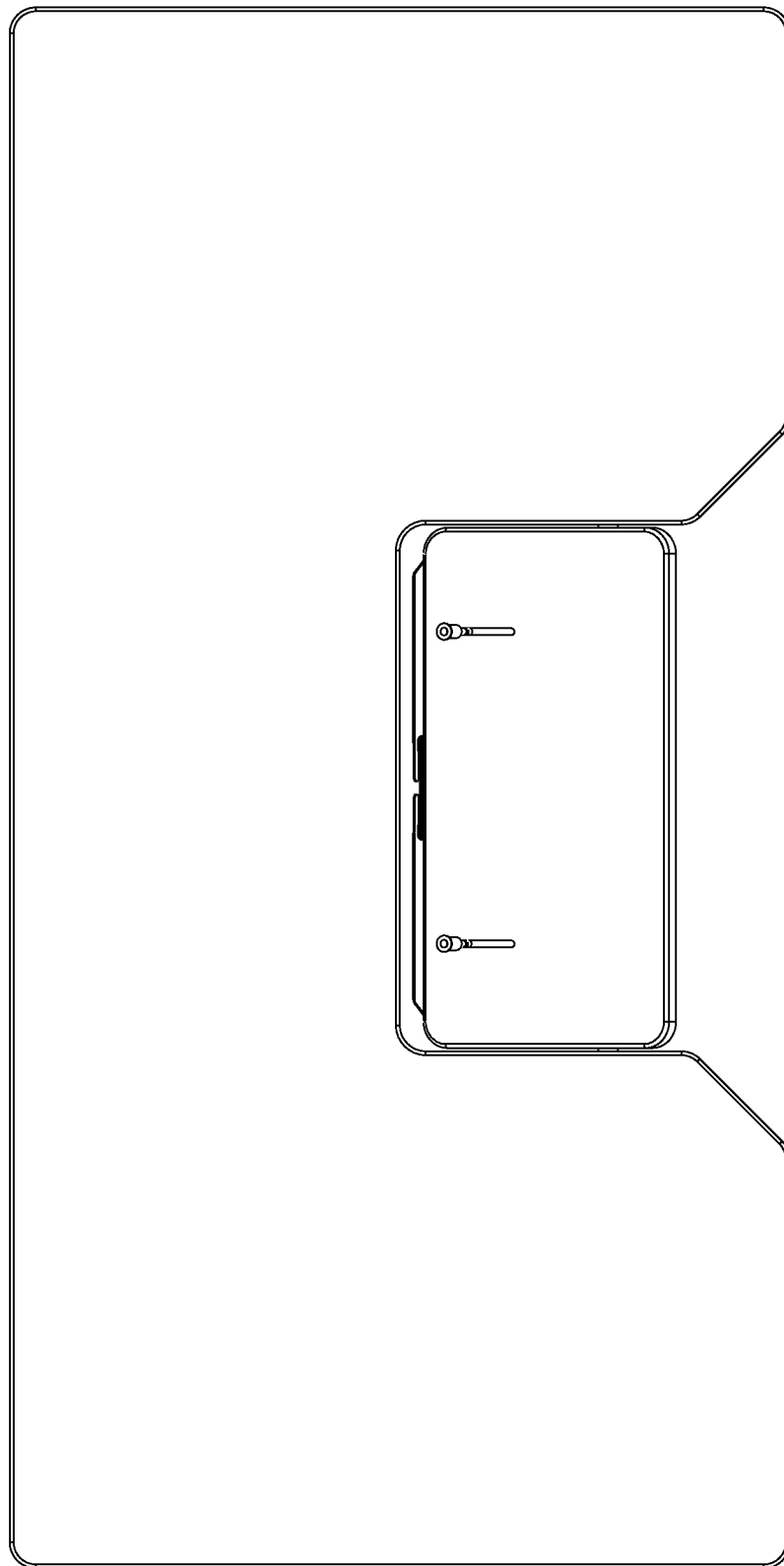


FIG.18

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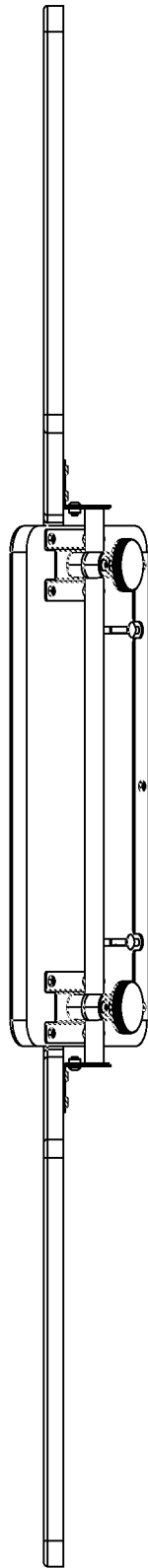


FIG. 19



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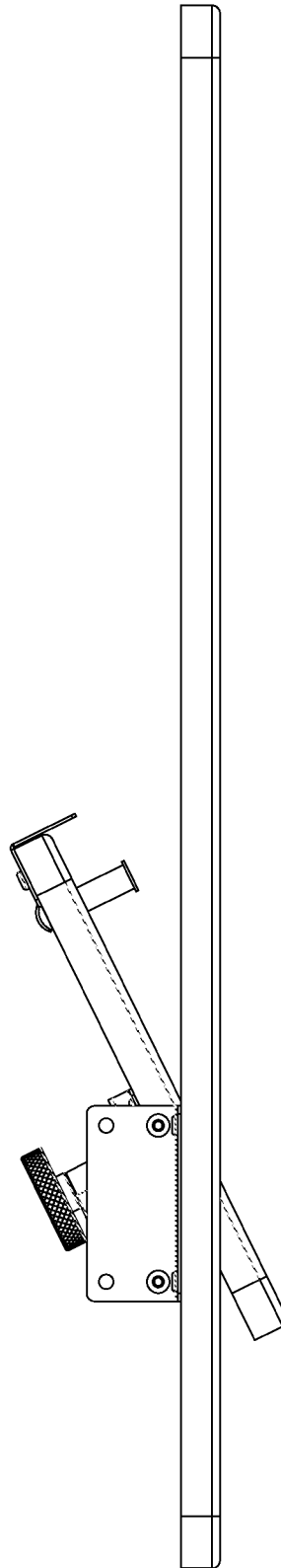


FIG.20

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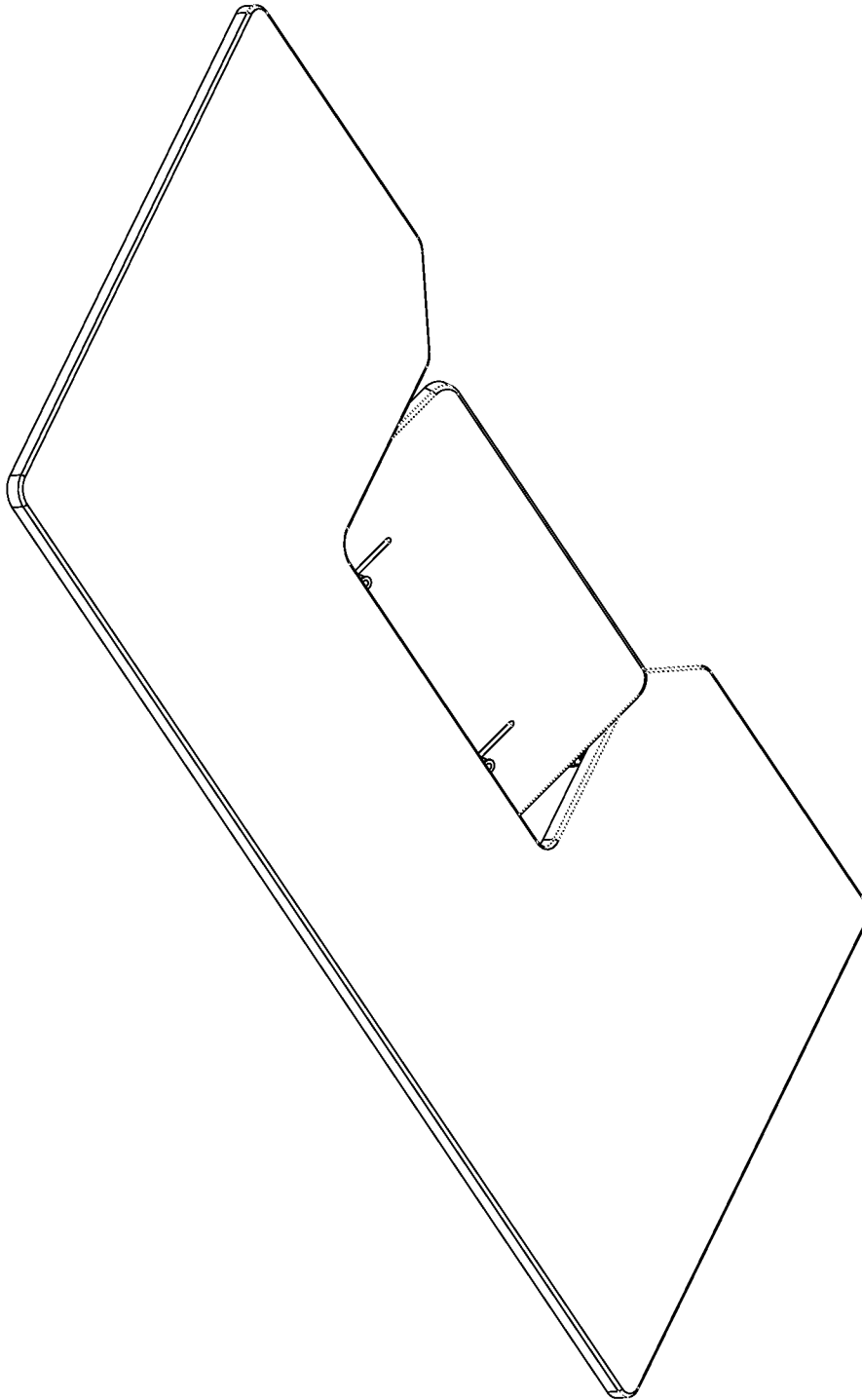


FIG.21

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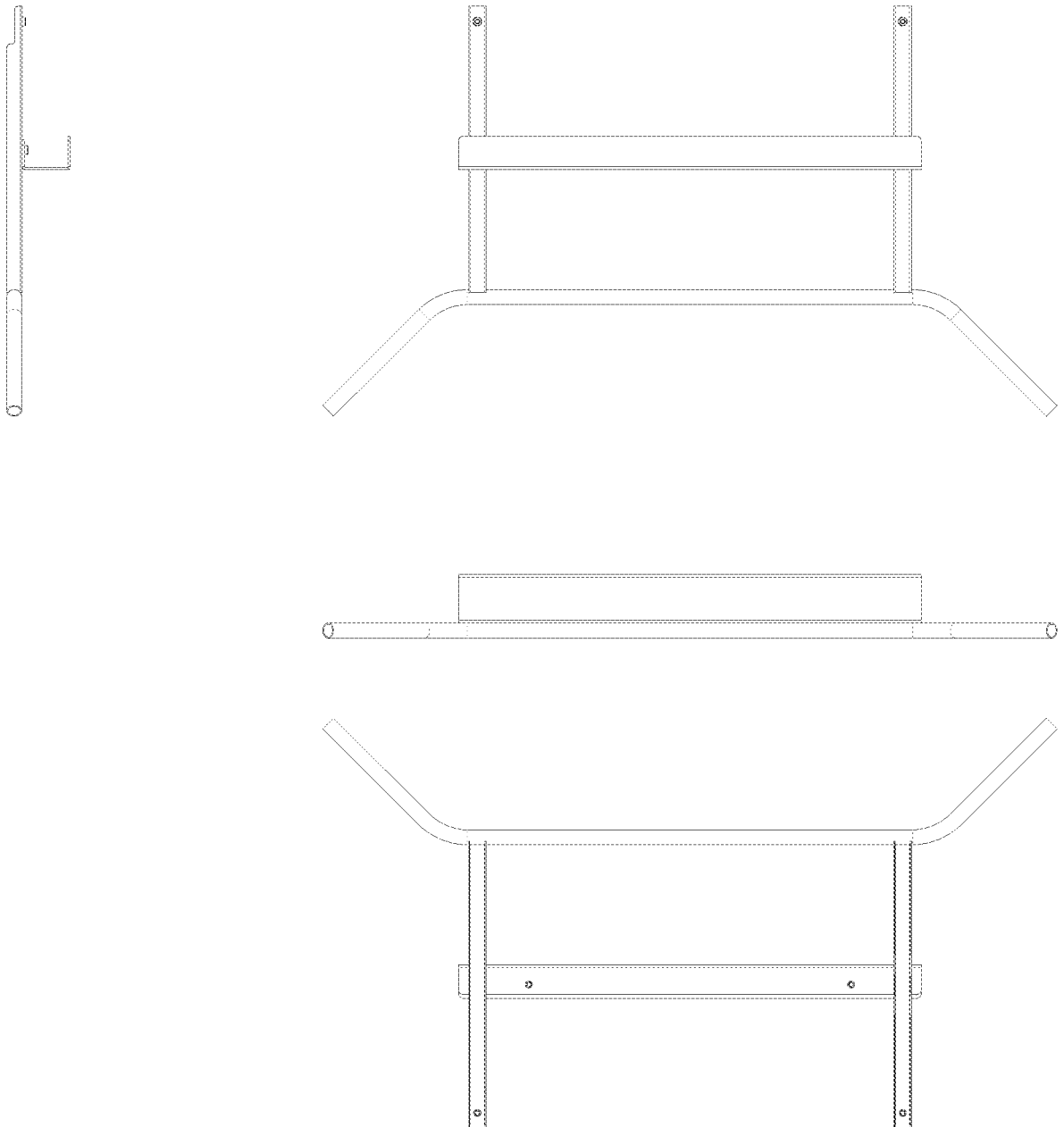


FIG.22A

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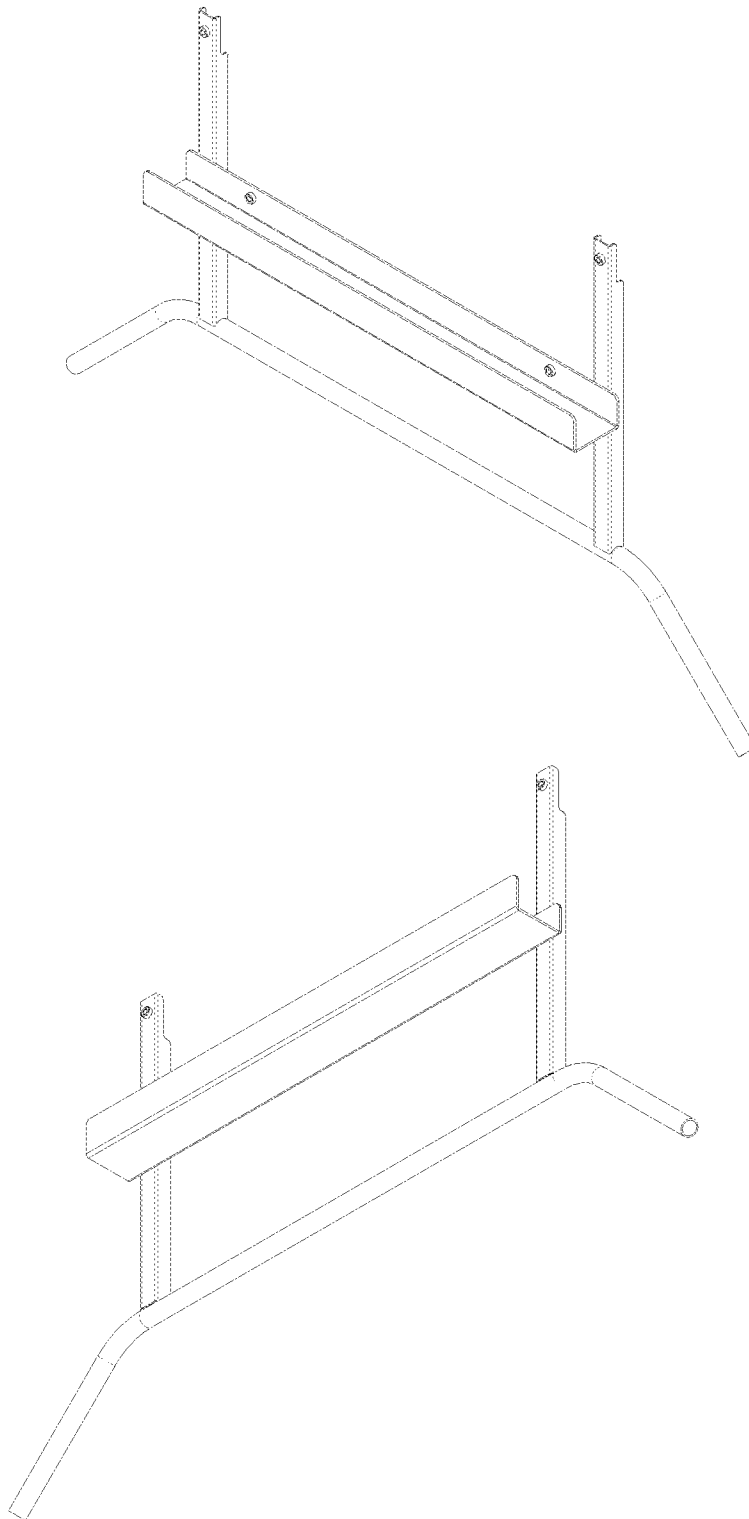


FIG.22B

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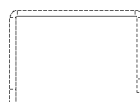
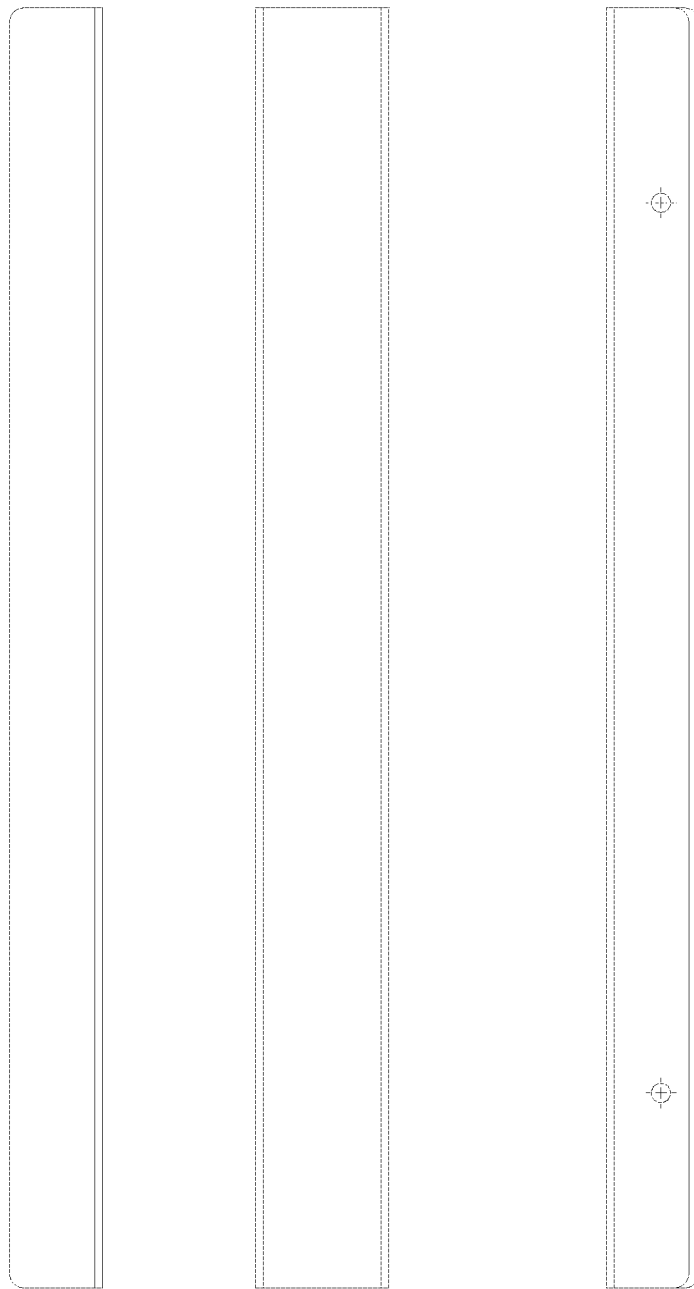


FIG.23A

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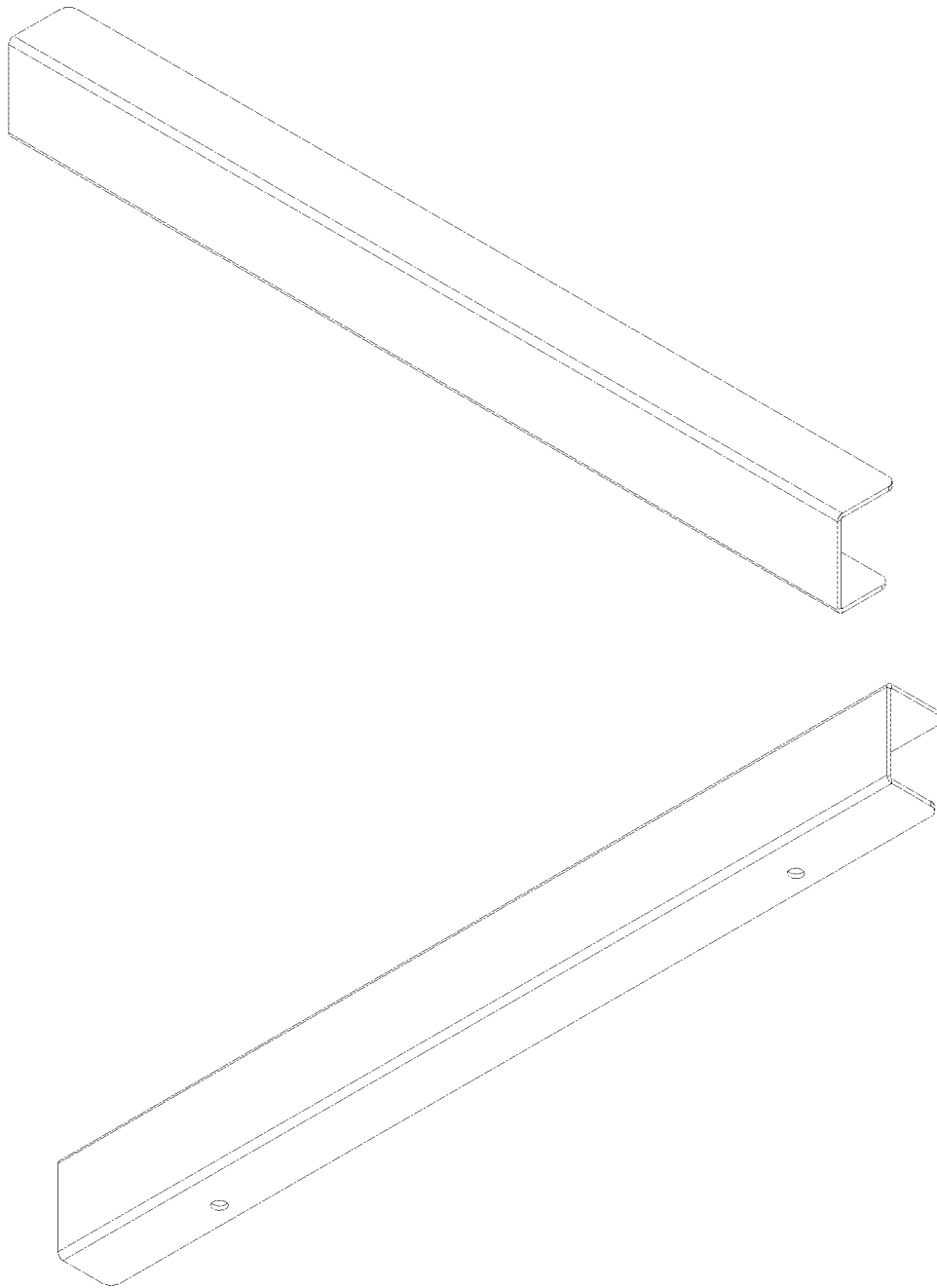


FIG.23B

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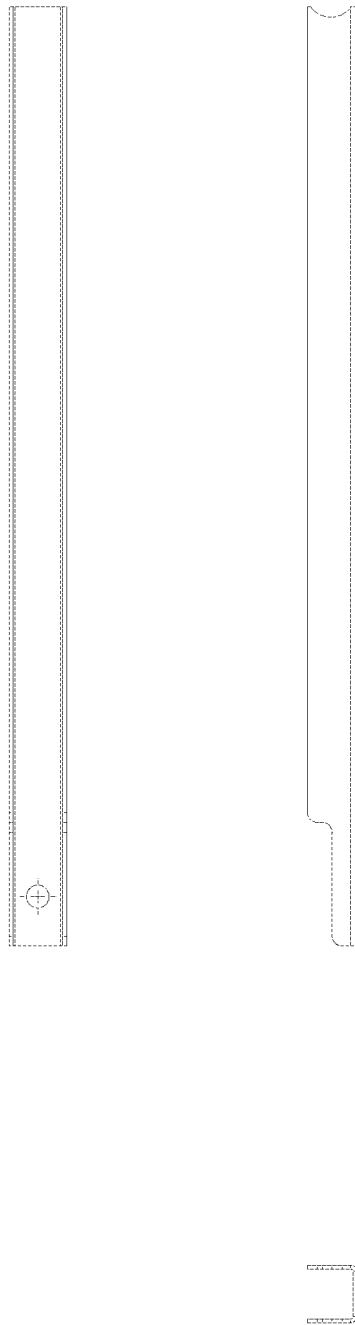


FIG.24A

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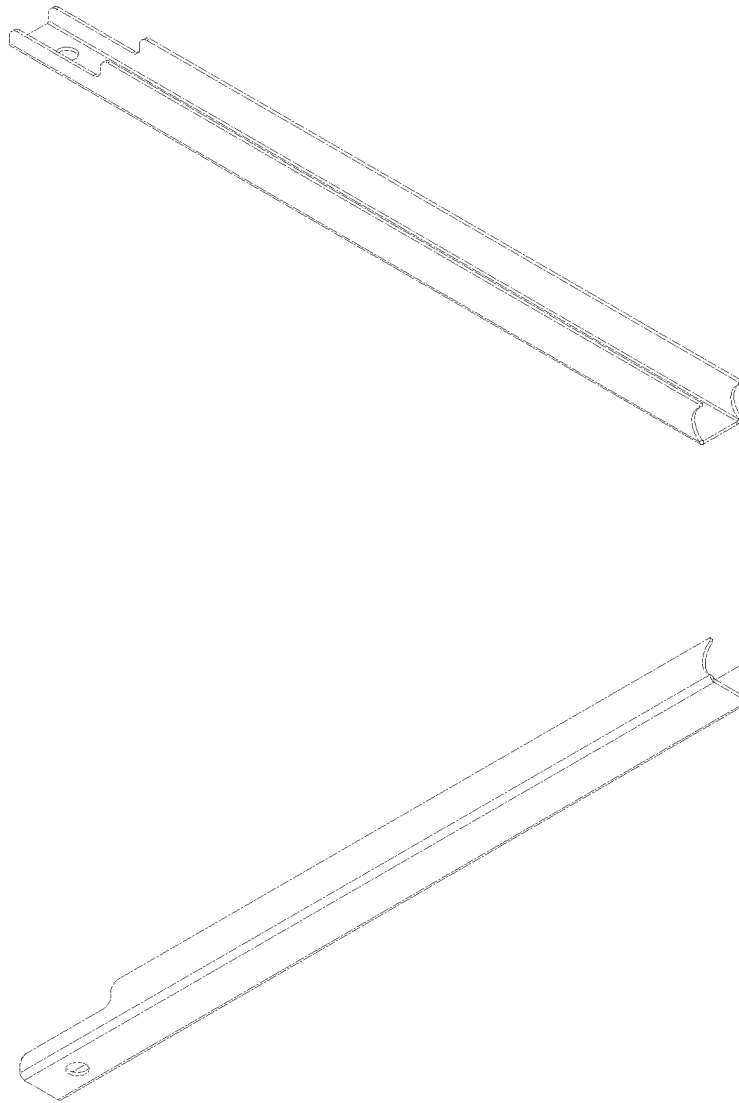


FIG.24B



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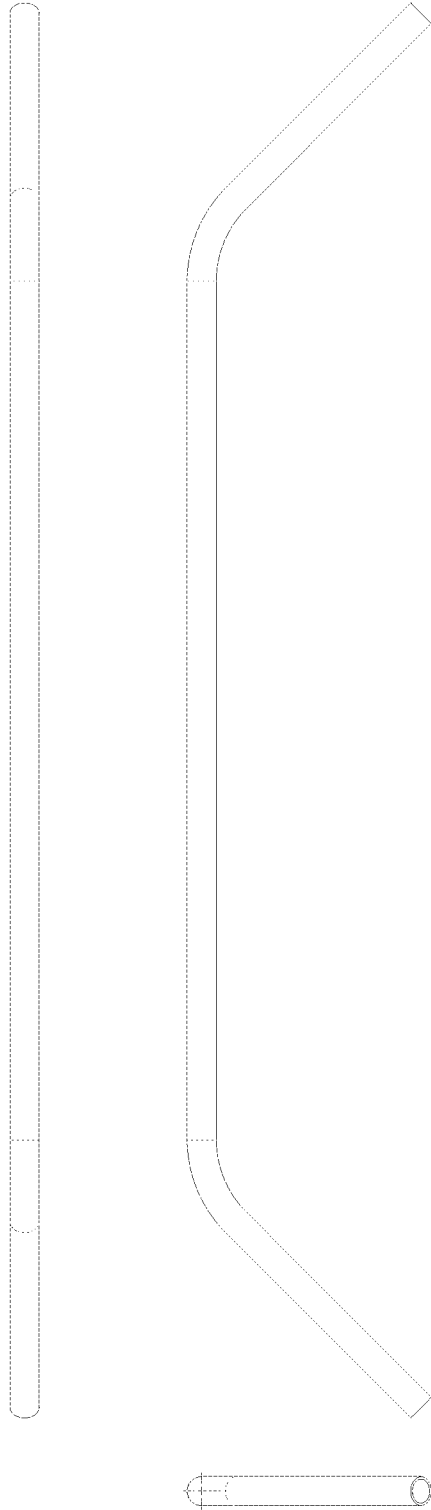


FIG.25A

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FIG.25B

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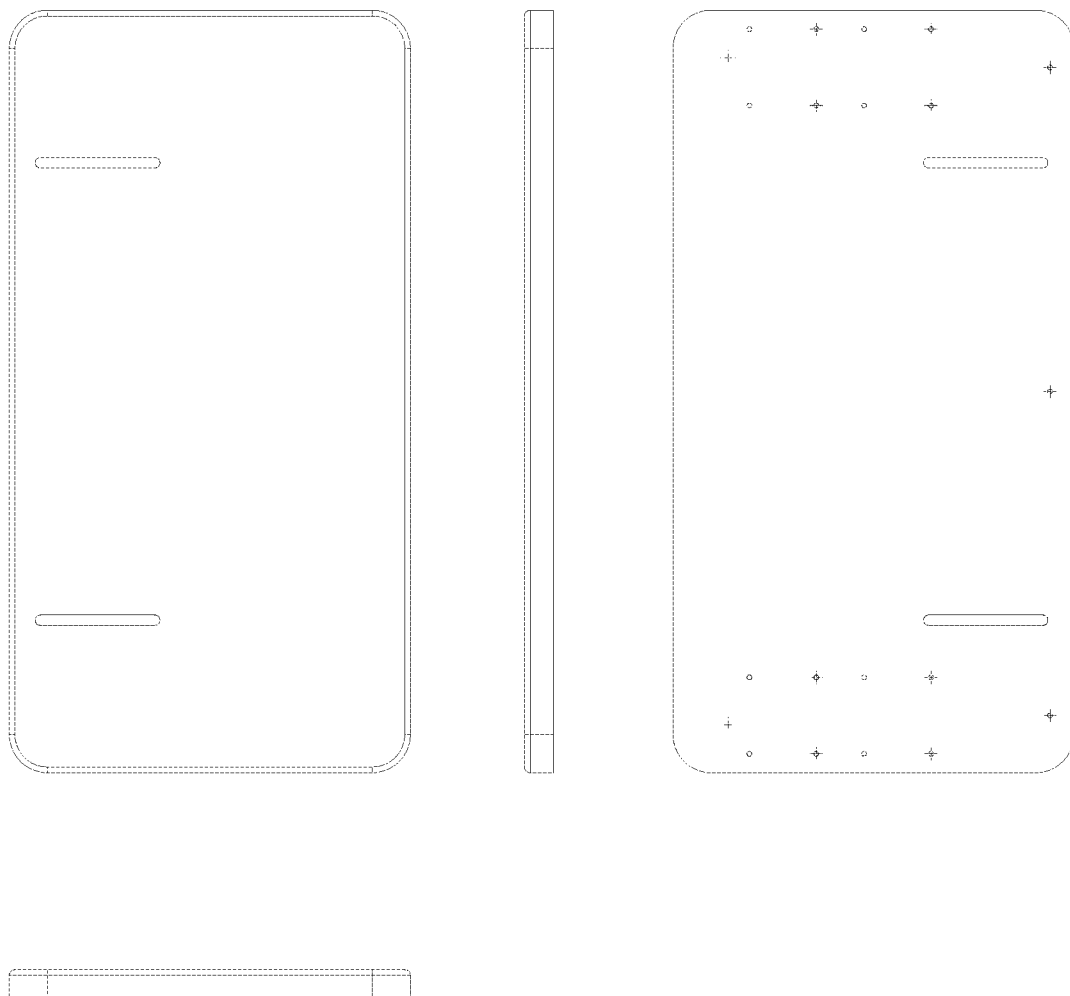


FIG.26A

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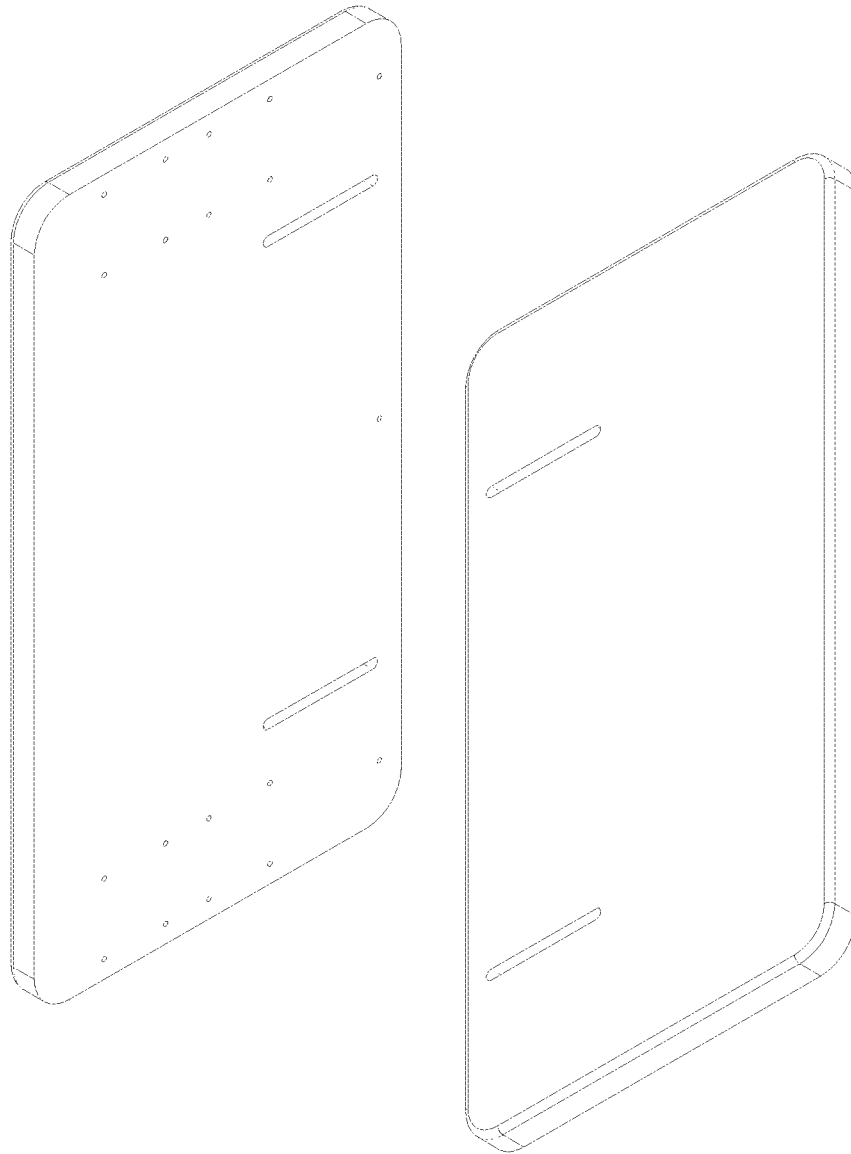


FIG.26B

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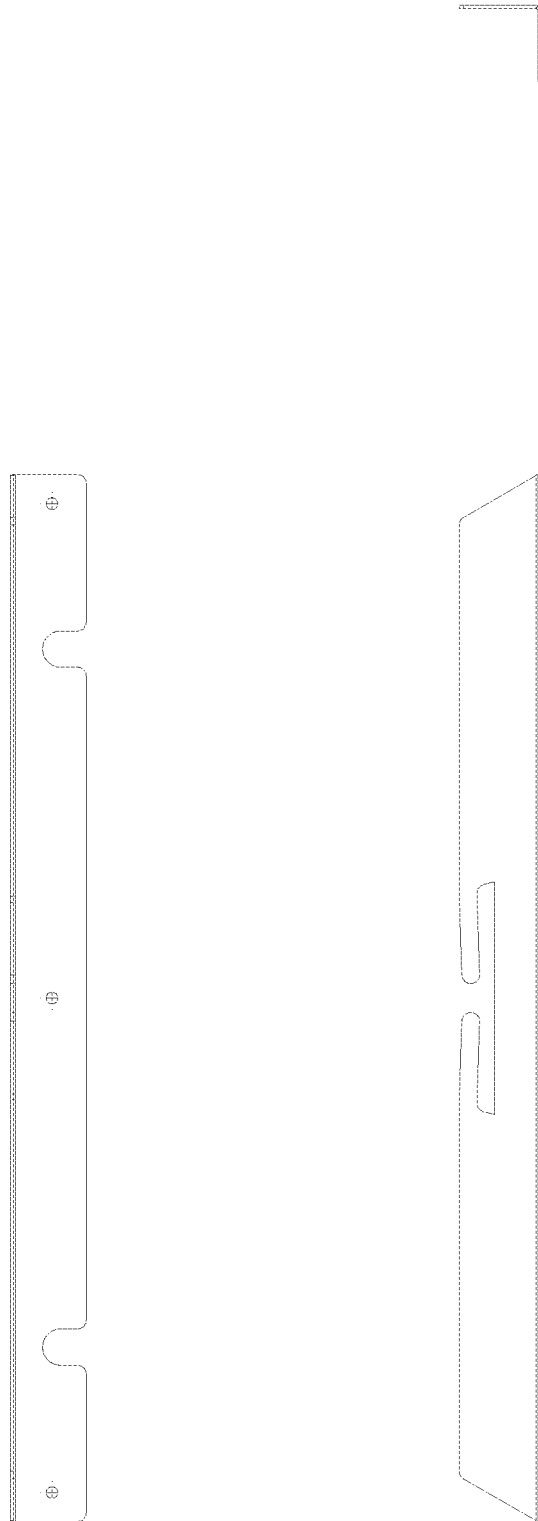


FIG.27A

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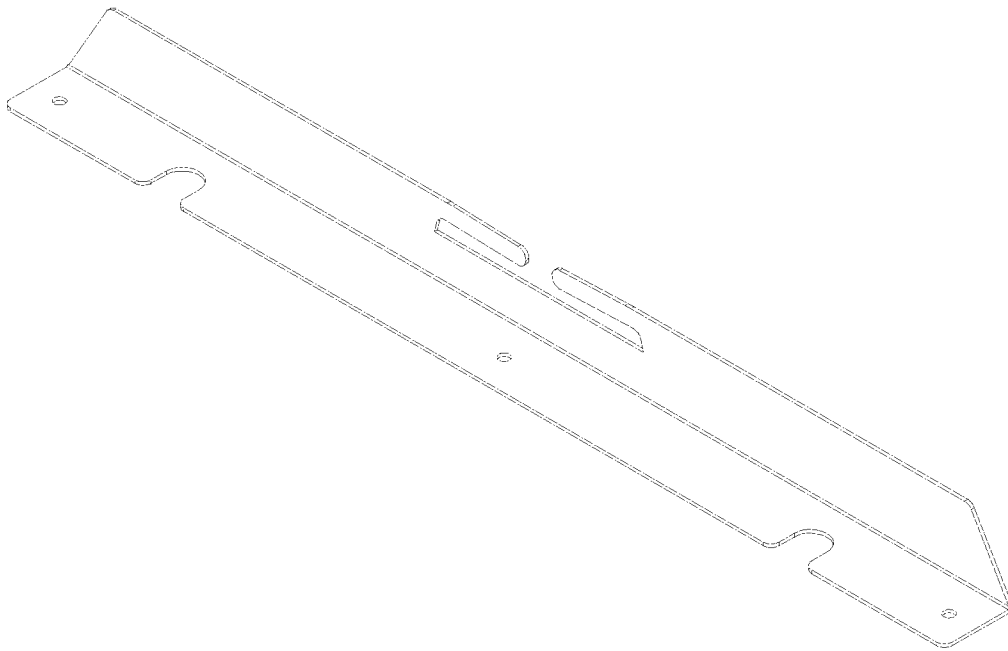


FIG.27B

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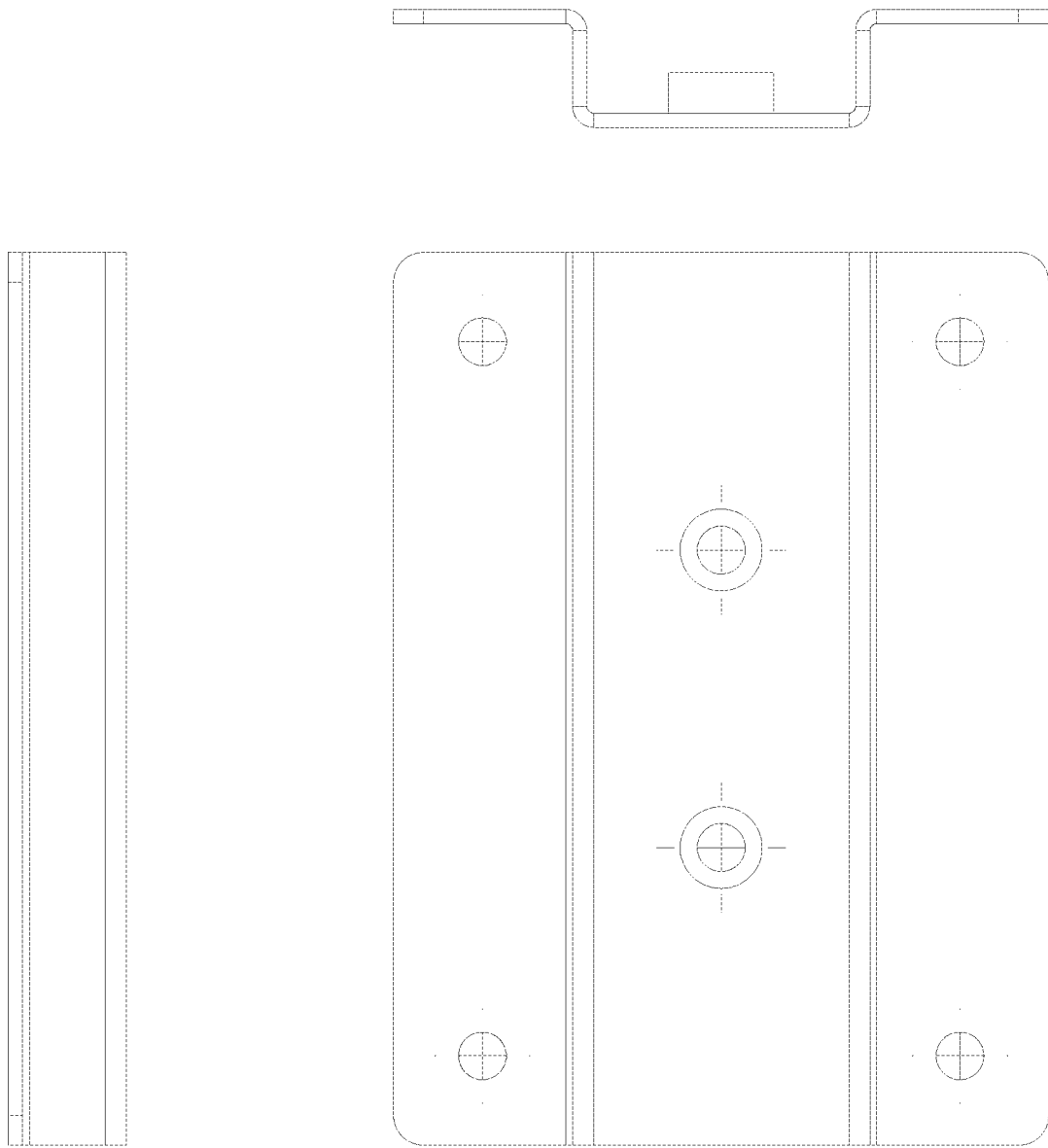


FIG.28A

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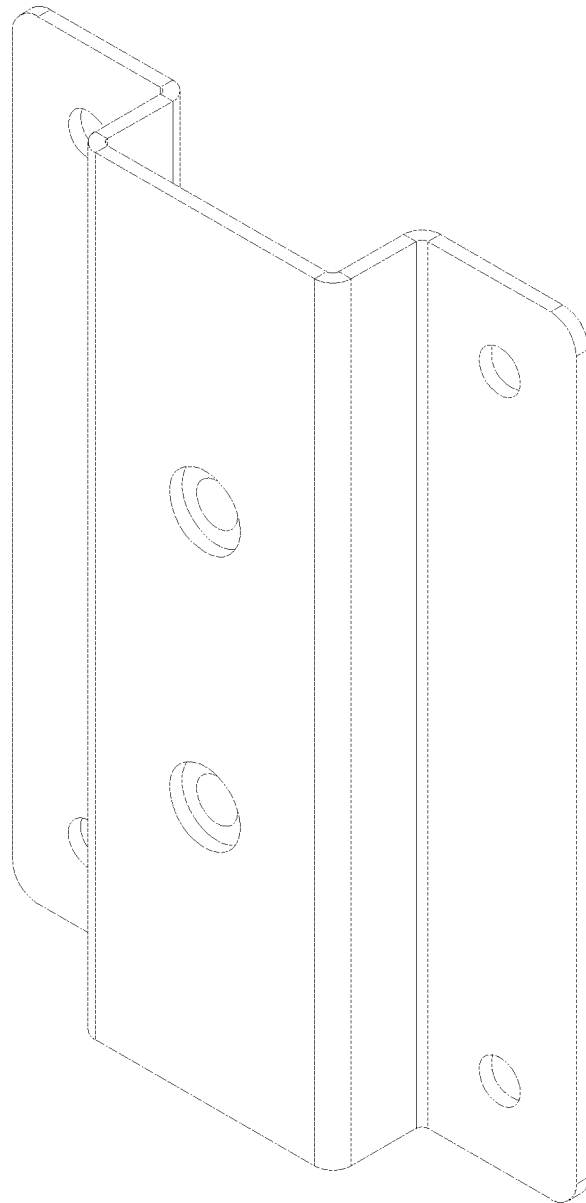


FIG.28B



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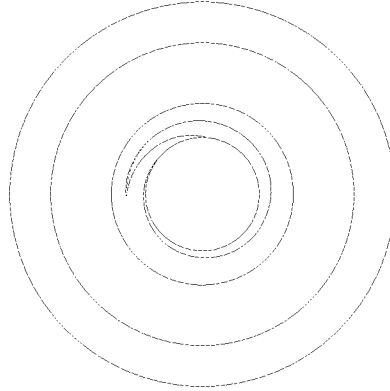


FIG.29A

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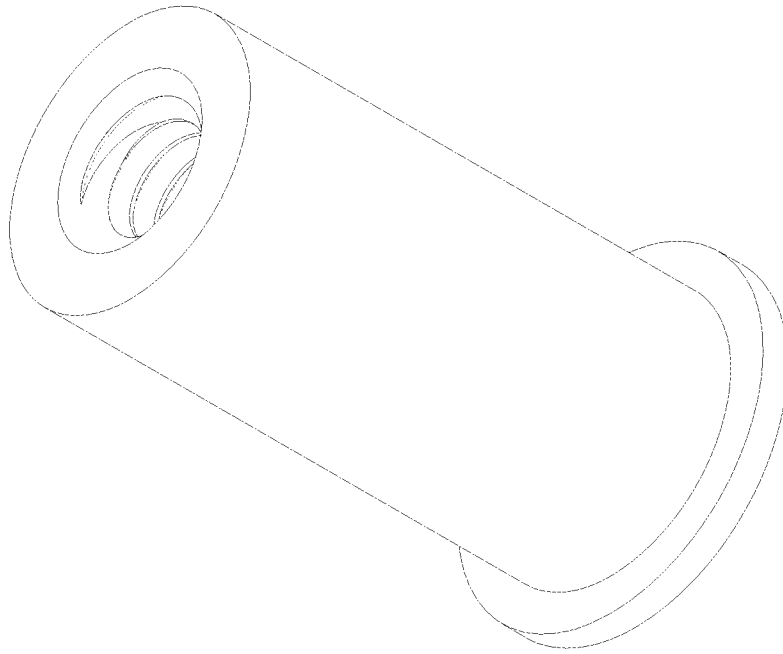


FIG.29B

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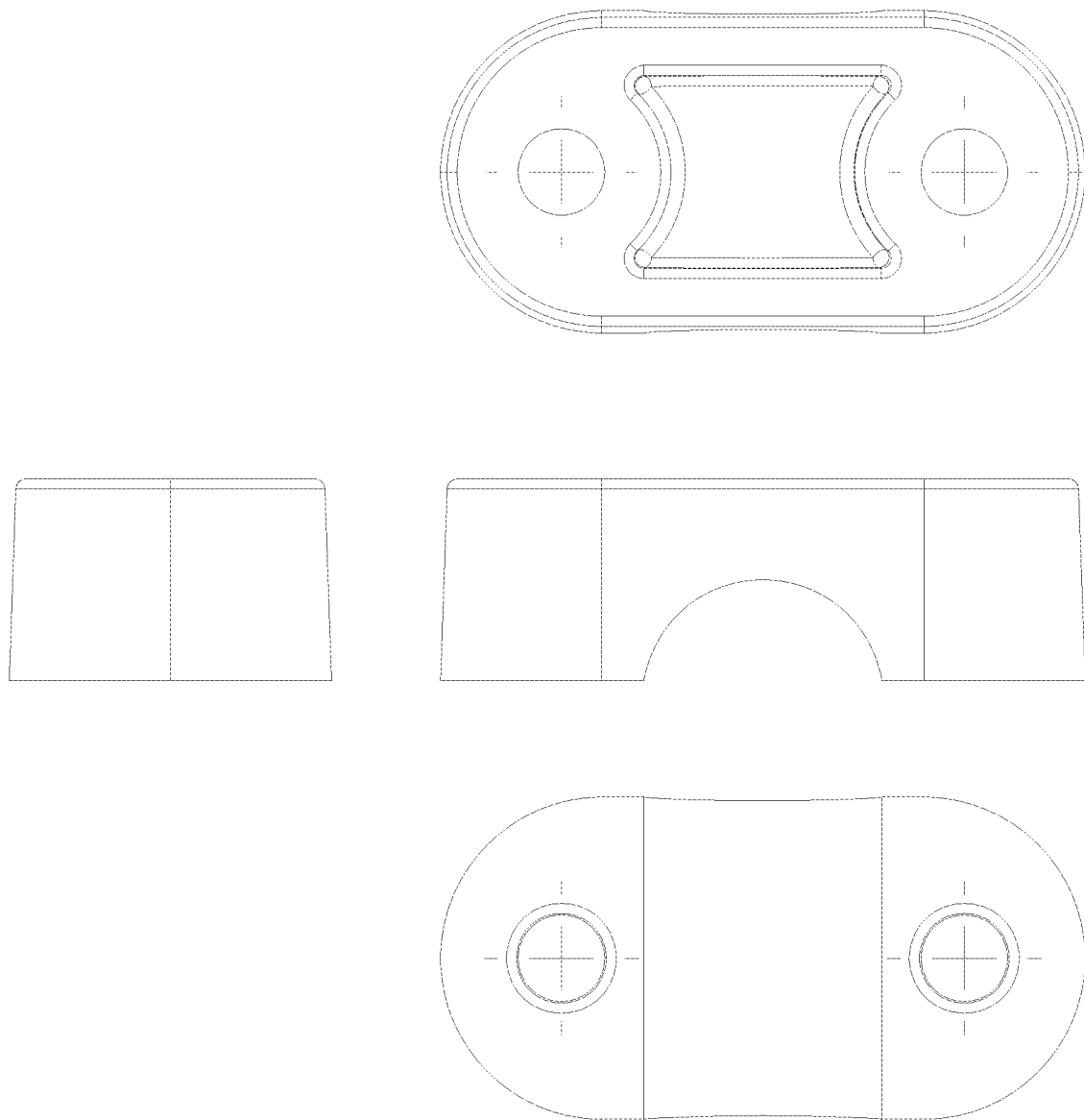


FIG.30A

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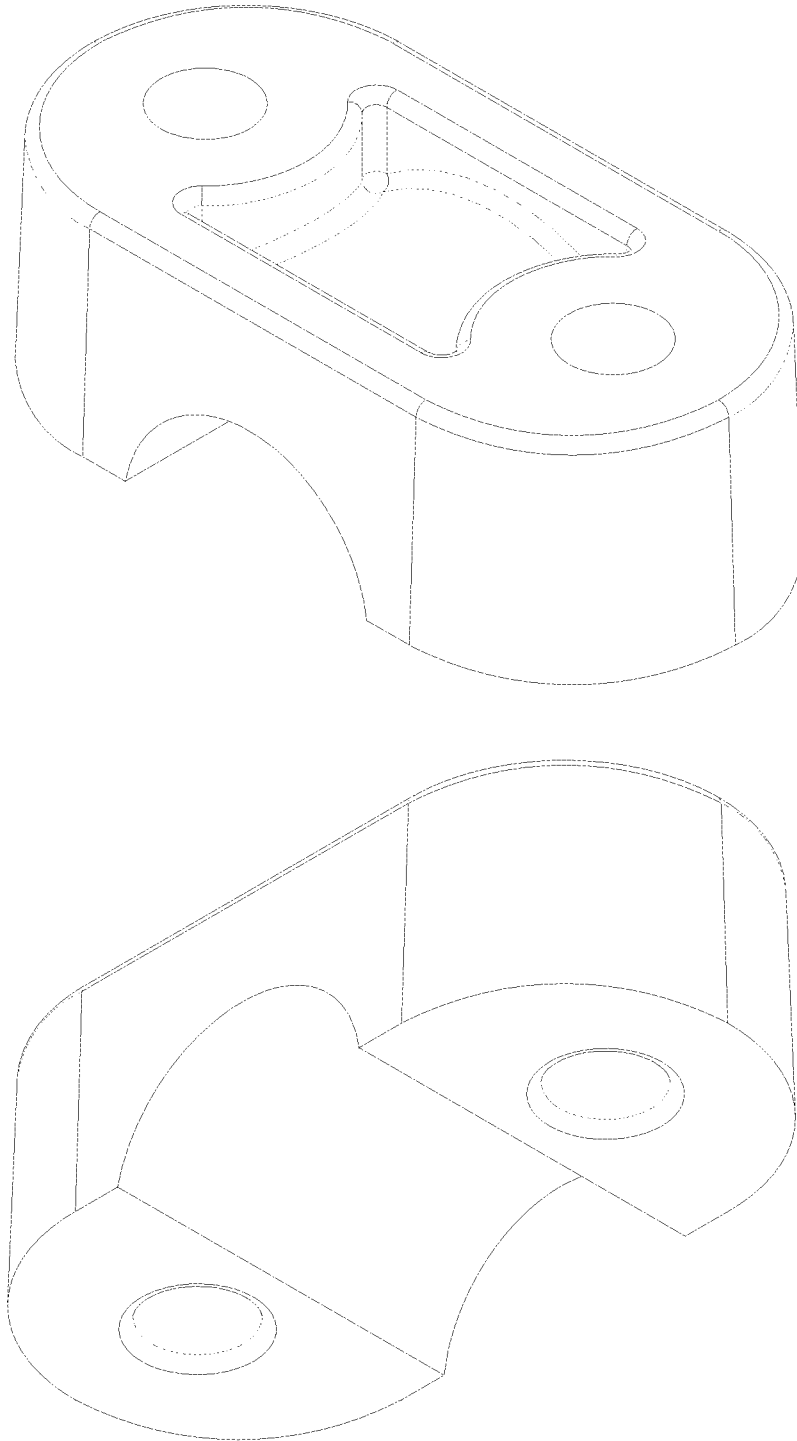


FIG.30B

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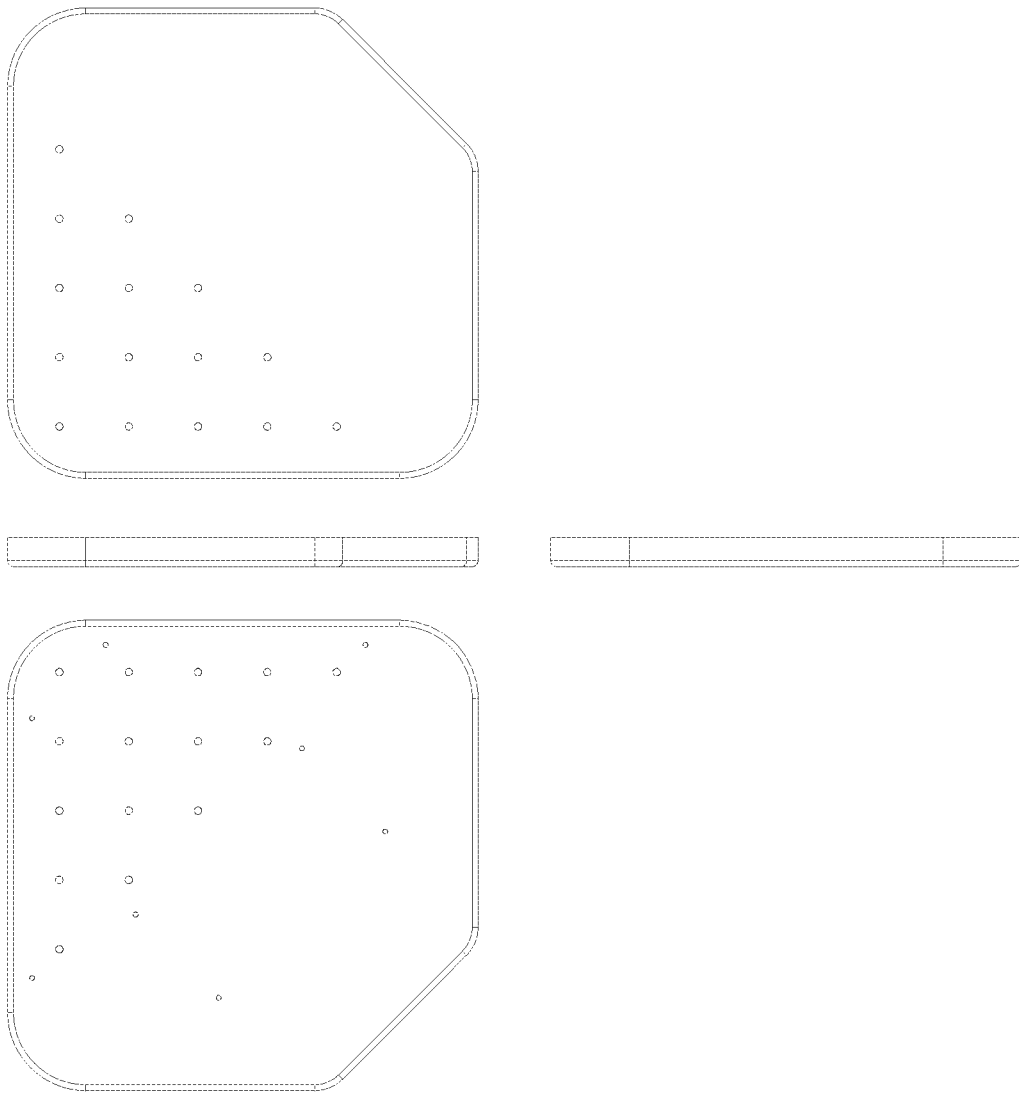


FIG.31A

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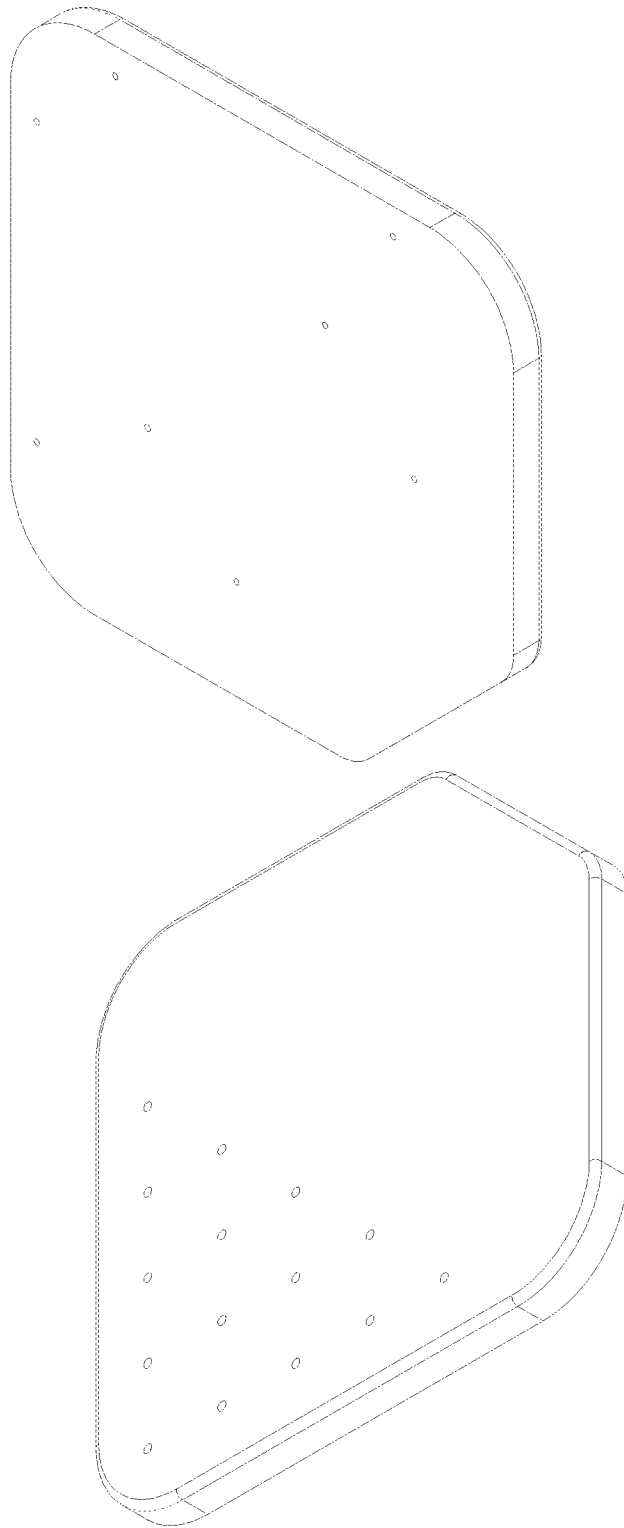


FIG.31B

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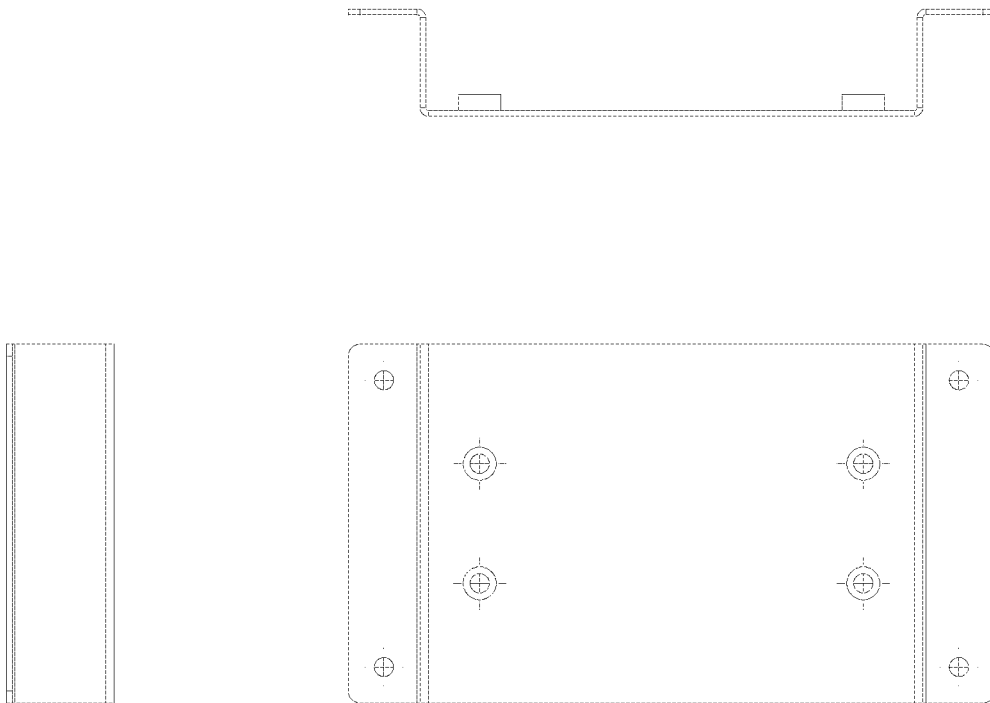


FIG.32A

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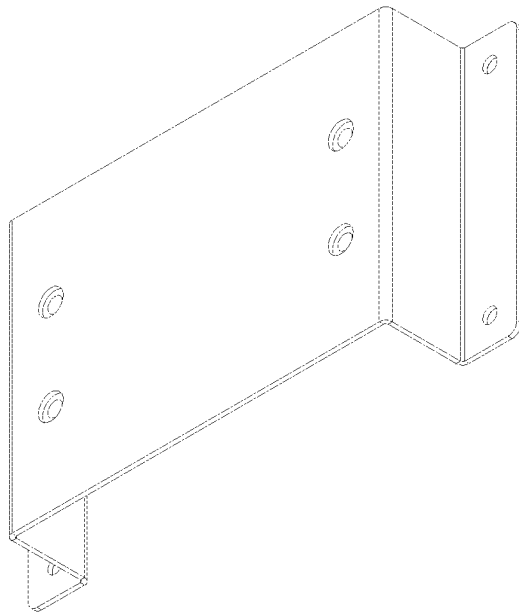
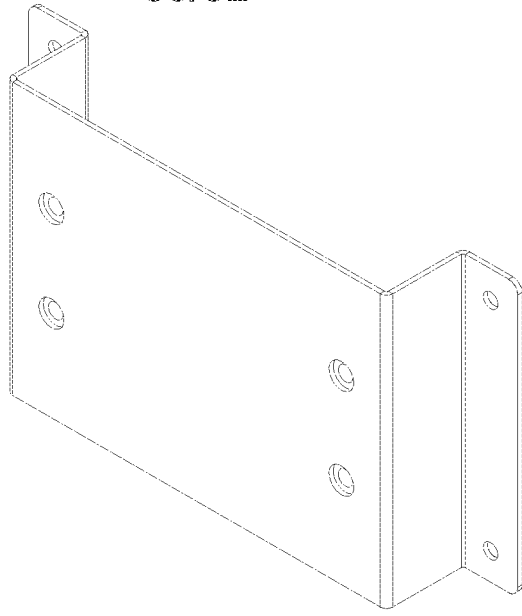


FIG.32B



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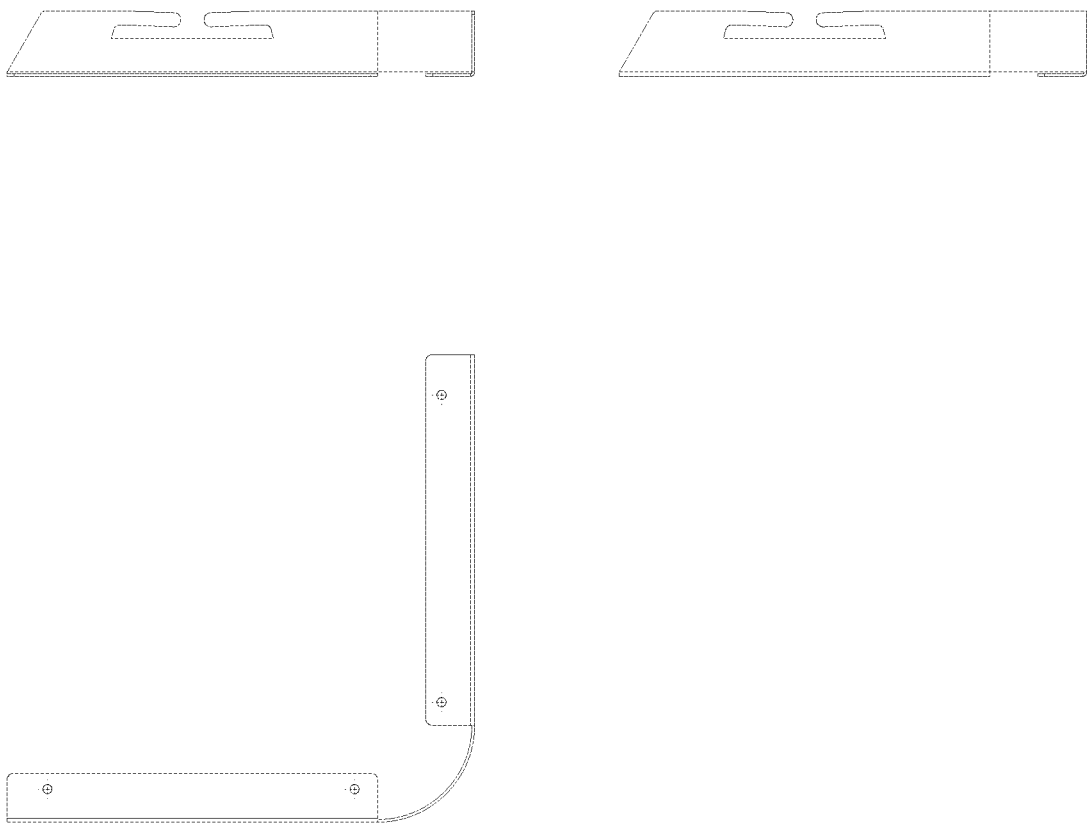


FIG.33A

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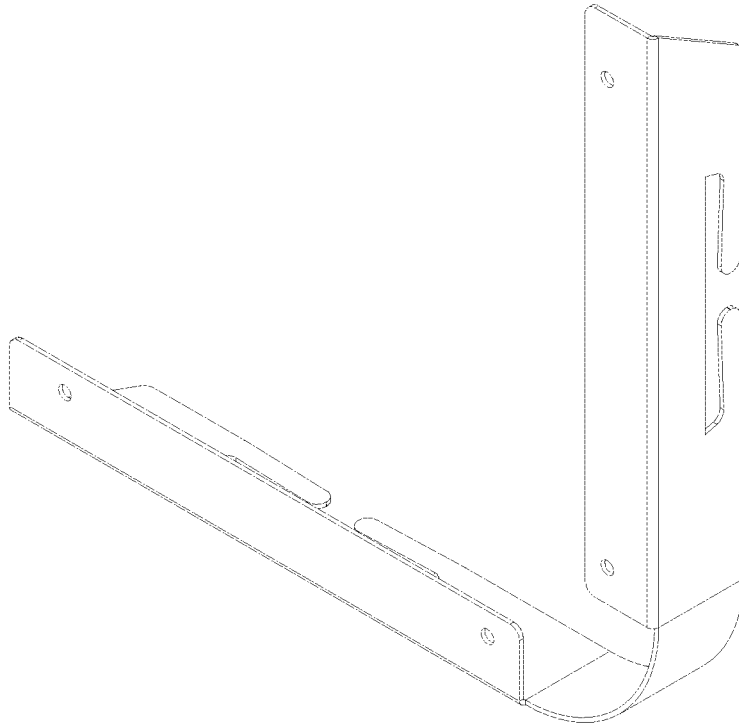


FIG.33B

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US15/49582

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - F16M 11/04; A47B 21/00 (2015.01)

CPC - F16M 11/04; A47B 21/0073; G06F 1/664

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8): F16M 11/00, 11/04; A47B 21/00; G06F 3/01 (2015.01)

CPC: F16M 11/00, 11/04; A47B 21/0073, 2021/0307; G06F 1/664, 3/01

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatSeer (US, EP, WO, JP, DE, GB, CN, FR, KR, ES, AU, IN, CA, INPADOC Data); ProQuest; Google Patents; Google Scholar; IEEE

Keywords: keyboard, ergonomic, adjustable, angle, sit, stand, walk, treadmill, mounting, clamp, peg

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006/0274045 A1 (STENBROTEN, S.) 07 December 2006; paragraphs [0023], [0054], [0073].	1
X	US 8,826,831 B2 (HAZZARD, J. et al) 09 September 2014; column 1, lines 54-62; column 2, lines 31-42, 61-67; column 21, line 5-7; column 22, lines 9-18.	1
X	US 2013/0210576 A1 (BILANG-HEIER, E.) 15 August 2013; paragraphs [0017], [0018], [0019], [0022]; claim 1.	1
X	US 2007/0066466 A1 (JONES, A. et al.) 22 March 2007; paragraphs [0013], [0027], [0028], [0030], [0038].	1
X	US 5,483,898 A (SEIDL, L) 16 January 1996; Figures 1-6.	1

 Further documents are listed in the continuation of Box C. See patent family annex.

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"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search

09 November 2015 (09.11.2015)

Date of mailing of the international search report

29 DEC 2015

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