ABSTRACT

A desktop workspace that adjusts vertically includes a work surface platform, a base configured to sit on an existing platform, such as a desk, a height adjustable mechanism including at least one set of arms that connect at a pivot point(s) creating a scissoring motion to raise and lower the said work surface platform to various heights. A locking and unlocking mechanism may connect to the height adjustable mechanism. In some cases, the apparatus includes an adjustable mechanism to support items such as a keyboard. In some cases, the apparatus includes elements to raise items such as a monitor to an additional height.

Exhibit 2003, Part 1
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IPR2025-00497

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Filing Date	2022-11-10
First Named Inventor	Nathan Mark Poniatowski
Art Unit	
Examiner Name	
Attorney Docket Number	1001-001US16

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	3	8304168	WO	A1	1983-12-08	Bergenwall		☐

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(51) International Patent Classification 3 : **A47C 19/04 // A61G 7/00 B66F 3/22**	**A1**	**(11) International Publication Number:** **WO 83/ 04168** **(43) International Publication Date:** 8 December 1983 (08.12.83)

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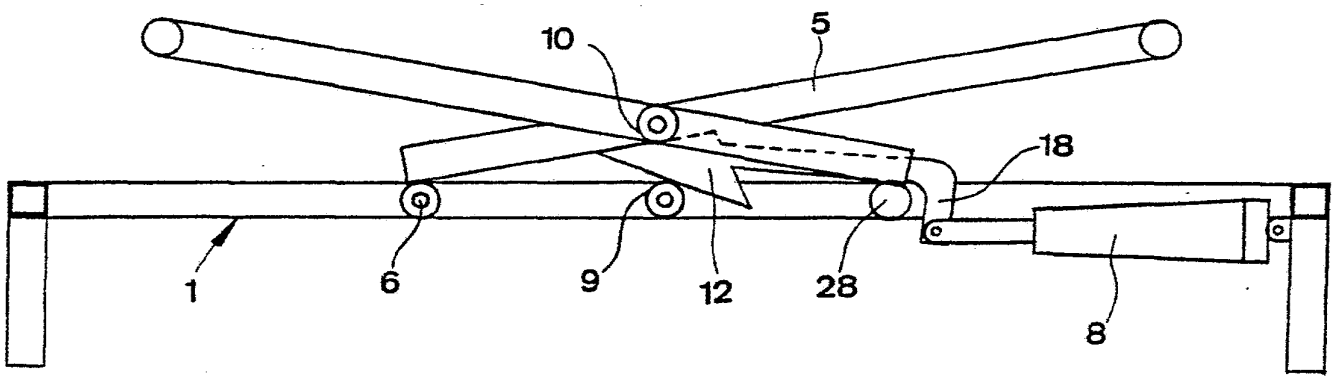
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(74) Agent: BJERKÉN, Jarl, Håkan; Gävle Patentbyrå AB, Box 304, S-801 04 Gävle 1 (SE).

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Published
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In English translation (filed in Swedish).

(54) Title: A DEVICE FOR RAISING AND LOWERING OBJECTS, SUCH AS BED FRAMES, W ORK TABLES OR THE LIKE



(57) Abstract

A device for raising and lowering objects comprises a stand (1), and arm (5) pivotably supported on the stand for carrying a bed frame or the like, a power mechanism (8) for pivoting the arm (5) and a wedge (12) which is insertable between portions of the stand and arm in order to actuate these portions away from each other and thereby pivot the arm upwardly from the stand. The wedge (12) is movable perpendicularly to the pivot axis (6) of the arm (5) and is connected to a dog (18) adapted to abut a component (28) connected to the arm (5) after a certain initial introduction of the wedge between said portions (9, 10).

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A device for raising and lowering objects, such as bed frames, work tables or the like

FIELD OF INVENTION AND PRIOR ART

This invention relates to a device of the kind defined in the preamble of appendant claim 1.

Such a device is known by FR-A 1 560 817. In this device, the element producing the wedge action is formed by a slide, which is guidedly movable in a horisontal path. The element has the character of a long beam, at the outer end of which the wedge portion is arranged. When the wedge portion, which apart from the contact with the support arm is freely located, urges the support arm to pivot upwardly, the element is exposed to a downwardly directed force giving rise to a torque, which may cause jamming with regard to the guiding of the element relative to the stand since this guide has to maintain the element in the horisontal path of movement and prevent pivoting downwardly of the wedge portion. Furthermore, a hinge between the wedge element and the power mechanism is, in the device according to the patent, located above the area of contact between the dog and the support arm or the part connected thereto, which on displacement of the element in order to pivot the support arm upwardly, gives rise to a torque on the element tending to pivot its wedge portion downwardly, which causes additional risk of jamming and loss of energy.

BRIEF DISCLOSURE OF THE INVENTION

The object of the invention is to devise a way for reducing the deficiencies discussed hereinabove.

This object is primarily obtained by that defined in the characteristic of claim 1. In this way, an embodiment is obtained, in which the forces acting on the wedge portion of the element in a direction downwardly during lifting of the support arm are balanced by means of the portion of the stand located therebelow so that the guide

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problems occurring in the French patent discussed previously are eliminated. This is in particular due to the fact that the mobility of the wedge portion in a vertical sense eliminates such breaking stresses which may occur in the device according to the patent by those guides which serve to maintain the element in its horisontal path of movement. Moreover, the design according to the invention makes it possible to obtain, by location of the hinge between the wedge element and the power mechanism below the area of contact of the dog, such actuation of the wedge portion that it will move upwardly during pivoting upwardly of the arm. Thus, the wedge element will urge the arm upwardly also when the proper wedge action has been terminated, i.e. when the wedge portion has entered out of contact with the stand.

SHORT DESCRIPTION OF THE DRAWINGS

With reference to the appended drawings, a more specific description of an embodiment example of the invention will follow hereinafter.

In the drawings:

fig 1 is a view from the side of the device according to the invention with the support arm lowered;

fig 2 is a plan view of fig 1;

fig 3 is a view illustrating the support arm somewhat pivoted upwardly; and

fig 4 is a view illustrating the support art fully pivoted upwardly.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

The device illustrated in the drawings for raising and lowering objects comprises a stand 1 having two longitudinal beams 2 and cross beams 3 arranged at the ends of beams 2. Legs 4 are provided at the outer ends of the cross beams. A support arm 5 is pivotably journalled to the stand about a generally horisontal axis 6. The object to be handled, such as a bed frame, a work table

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or the like, may be attached in a manner known per se at the upper end of support arm 5 and the cross piece 7 provided thereon. A power mechanism 8 is adapted to pivot arm 5. The mechanism is constituted by a piston cylinder mechanism.

The mechanism 8 is connected to an element 11 which is introducable between portions 9 and 10 of the stand 1 and support arm 5 respectively, said element producing, in cooperation with said portions 9, 10, a wedge action tending to pivot the arm upwardly from the stand.

The element 11 is displaceable generally perpendicularly to the pivot axis 6 of arm 5 and has a wedge shaped forward portion 12. This portion has two surfaces 13 and 14 diverging from the tip of the wedge and adapted to contact portions 9 and 10 respectively.

A second arm 15 is connected to arm 5 via an axis 16 parallel to axis 6. The arm 15 has a portion 17 protruding from the axis 16, the end of said portion being attached to a cross member 28, the opposite ends of which are received in separated guides on the inner sides of the longitudinal beams 2 in such a manner that cross member 18 is displaceable reciprocatingly in the guides and also rotatable about an axis parallel to the pivot axis 6 of arm 5.

The mechanism 8 and element 11 are associated to a dog 18, which is adapted to, after displacement of the wedge portion 12 of the element in a certain degree into a position between portions 9 and 10, abut cross member 28 in order to apply the force developed by the mechanism thereon. The dog 18 is formed by a downwardly directed projection on the element. This projection is connected to wedge portion 12 by means of an intermediate portion 19 extending at an angle to the projection.

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Preferably, the arms 5 and 15 are coordinated with the axis 16 between the ends of the arms like a pair of scissors so that also arm 15 with a cross piece 20 located at the end opposite to the cross member 28 may take part in supporting the object in question. On the cross member 28, guide surfaces 21 may be provided, between which portion 19 of element 11 is movable.

The dog 18 is rigidly associated to the connecting portion 19, which in turn is rigidly connected to wedge portion 12. However, the mechanism 8 is hingedly connected (hinge 22) to the outer end of projection 18. The hinge 22 is located below that location where the projection 18 is adapted to contact cross member 28 so that a tendency to pivoting upwardly of wedge portion 12 is obtained on expansion of mechanism 8.

The portions on which the wedge surfaces 13 and 14 actuate are formed by a stationary portion on the stand and a portion located in the area of the hinge 16 between arms 5 and 15. The portion 9 is formed by means of a cross piece 23 extending between the longitudinal beams 2. The cross piece 23 may be provided with a roller to reduce friction relative to wedge surface 13. Another roller 24 may be journalled about axis 16 between arms 5 and 15, said roller being intended for contact with wedge surface 14 and forming said contact portion 10. As appears from figs 1 and 2, arms 5 and 15 are parallell to the upper surface of the stand when the device is folded. Further, it appears from fig 1 that the wedge portion 12, when element 11 is maximally retracted by mechanism 8, has its tip retained between the portions or rollers 9 and 10.

The device operates as follows: If it is desired to raise an object carried on the cross pieces 7 and 20 starting from the position according to fig 1, the mechanism 8 is supplied with pressure fluid so as to be extended. This causes wedge portion 12 to be introduced between portions 9 and 10 and separate them as illustrated in fig 3. Since the pivot axis 6 of arm 5 in this case is

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stationary relative to the stand, the cross member 28 is displaced in guides 19. By the design of wedge portion 12, a comparatively small amount of power of mechanism 8 is required to obtain initial pivoting upwardly of arms 5 and 15. After some additional expansion of mechanism 8, dog 18 will hit on cross member 28 so that power from mechanism 8 now is applied on said cross member. During continued extension of mechanism 8, the arms are pivoted relative to each other to the position according to fig 4. The forward wedge portion 12 of element 11 is maintained pivoted upwardly and in contact with roller 24 by the torque exerted on the element due to the location of hinge 22 below the contact area between dog 18 and cross member 28.

Modifications of the device are of course possible within the scope of the invention.

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Claims

1. A device for raising and lowering objects, such as bed frames, work tables or the like, comprising a stand (1), at least one arm (5) pivotably carried by the stand, said arm being adapted to support the object in question, a power mechanism (8) for pivoting the support arm, and an element (11) connected to the mechanism, said element being, by means of said mechanism (8), displaceable generally perpendicularly to the pivot axis (6) of the support arm (5) and designed to provide, in cooperation with a portion (10) of the support arm, a wedge action tending to pivot said portion and thereby the support arm (5) upwardly from the base, said mechanism (8) and element (11) being connected to a dog (18), which is adapted to, starting from a maximally downwardly pivoted position of the support arm (5), engage the support arm (5) or a part (28) connected thereto after an initial displacement of the element (11) and associated initial pivoting upwardly of the support arm (5) and apply power developed by said mechanism (8) on the support arm (5) or the part connected thereto for the remaining pivoting upwardly of the support arm (5), c h a r a c t e r i z e d in that a portion (12) of the element (11) which provides the wedge action is vertically movable and introducable between said portion (10) of the support arm (5) and a portion (9) of the stand located therebelow so as to move said portions (9, 10) away from each other by wedging contact therewith.

2. A device according to claim 1, a second arm (15) being hingedly connected to the first mentioned arm (5) and having an end portion facing away from said first arm (5) cooperating with a guide (19) arranged in the stand and extending at an angle to the pivot axis (6) of the first arm, said second arm being displaceable and pivotable relative to said guide, said dog (18) being adapted to actuate the second arm (15) and rigidly connected to the element and wedge portion, said element (11)

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being hingedly connected (about axis 22) to the power mechanism (8) c h a r a c t e r i z e d in that the hinge (22) between the element (11) and the mechanism (8) is disposed below the contact area between the dog (18) and the second arm (15) to obtain actuation of the wedge portion (12) upwardly when the mechanism (8) urges the dog against the second arm.

3. A device according to claim 2, said portion (10) of the first arm (5) being formed by a roller arranged about a pin shaft (16) forming the hinge between the arms, c h a r a c t e r i z e d in that the portion (9) on the stand (1) is formed by a second roller.

4. A device according to claim 1 or 2, c h a r a c - t e r i z e d in that the wedge portion (12) has its outer end retained between said portions (9, 10) of the first arm (5) and the stand when said arm is maximally pivoted downwardly towards the stand and the element (11) is maximally retracted.

5. A device according to claim 1 or 2, said element (11) having a generally horisontal extent in its maximally retracted position and the wedge portion (12) having an upper upwardly sloping wedge surface (14), c h a - r a c t e r i z e d in that the wedge portion (12) in the retracted position of the element has a downwardly sloping second wedge surface (13) for cooperation with said portion (9) of the stand.

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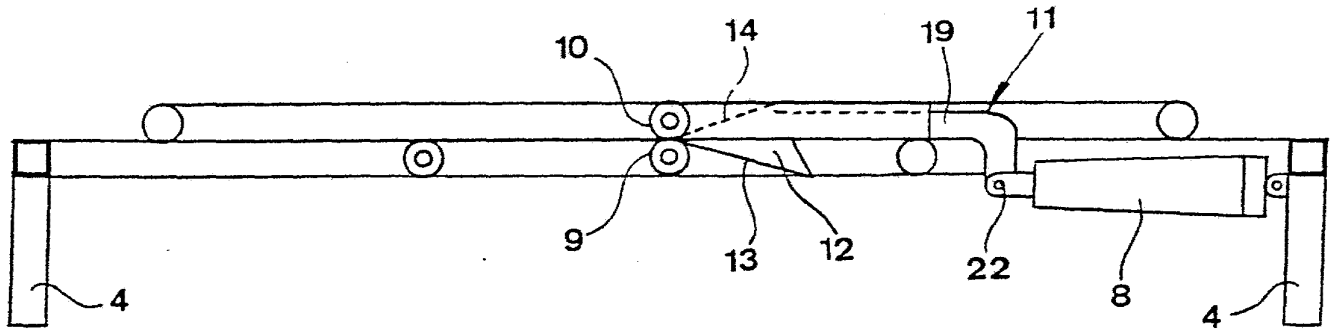


Fig 1

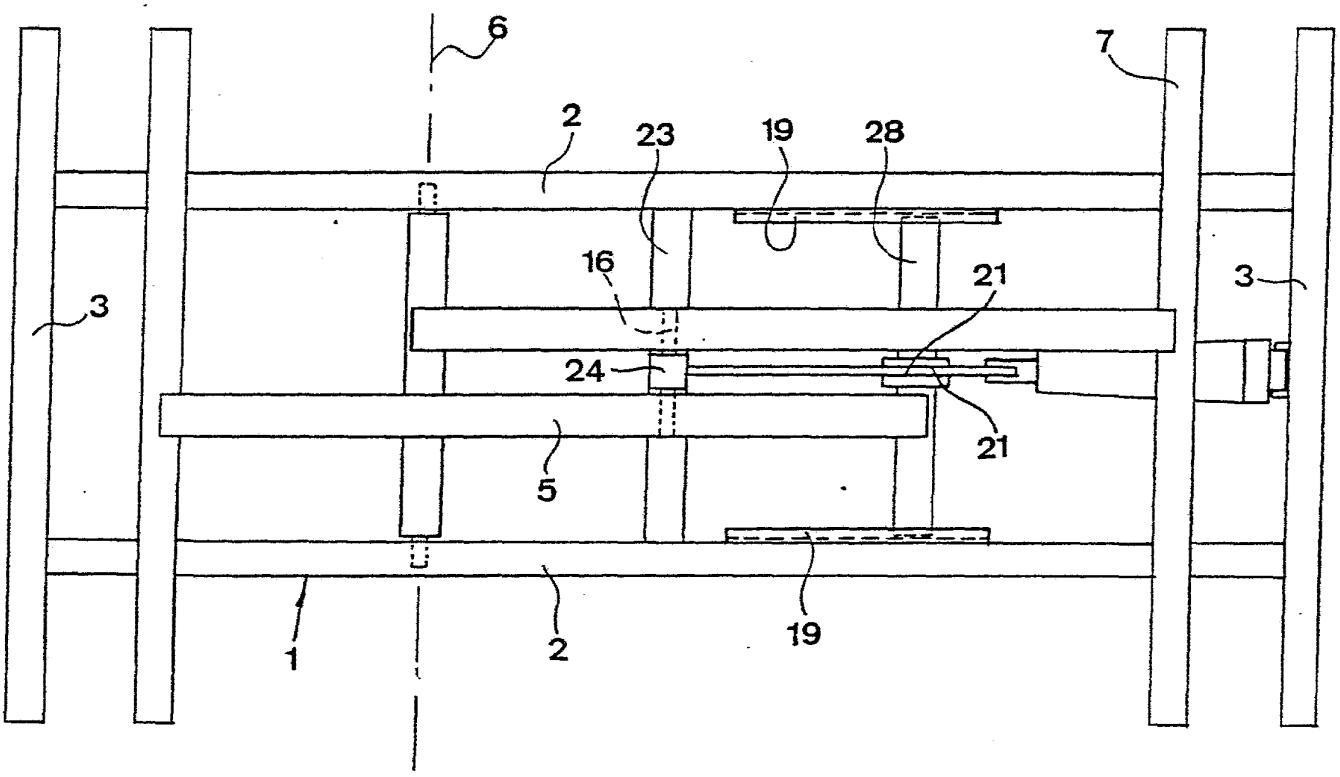


Fig 2

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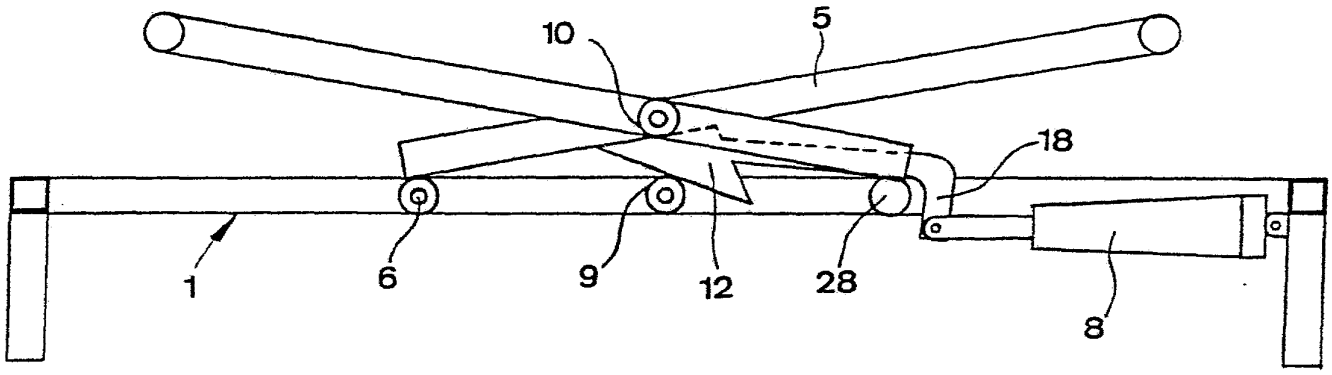


Fig 3

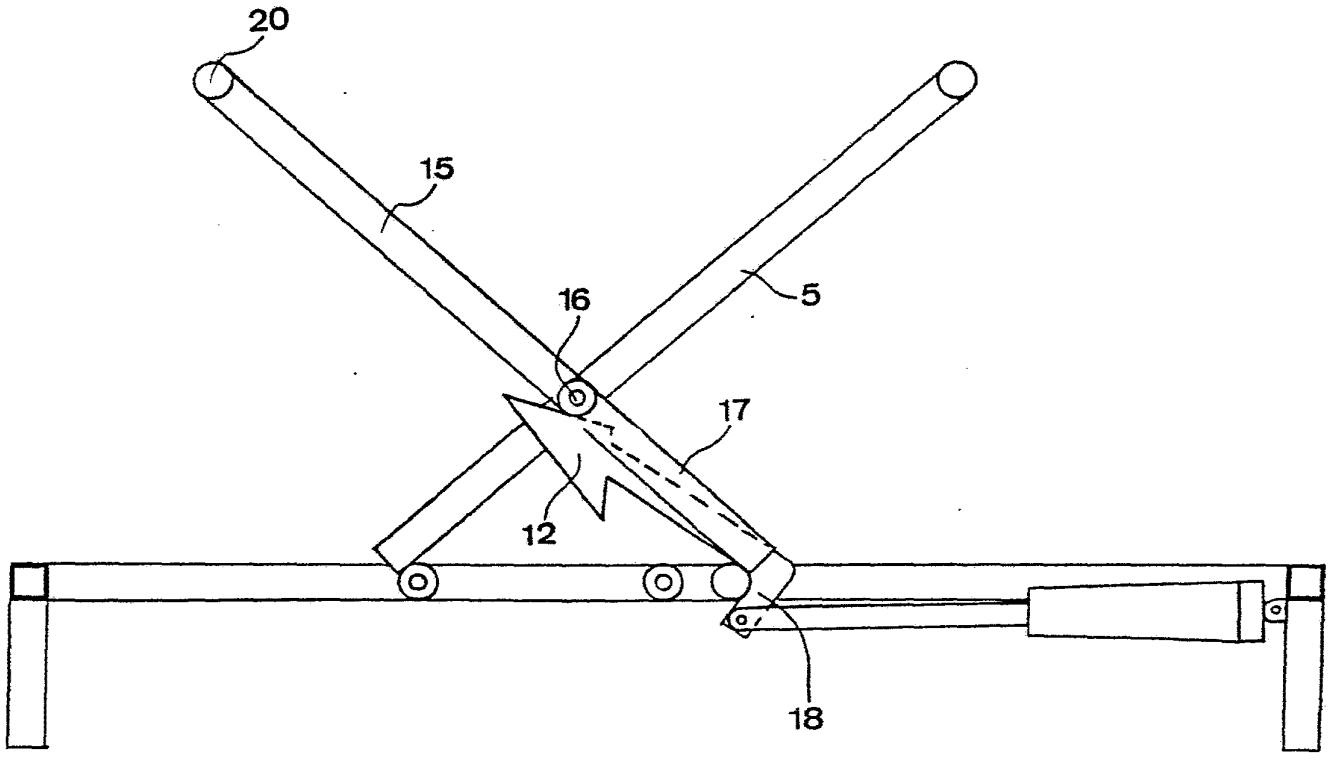


Fig 4

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INTERNATIONAL SEARCH REPORT

International Application No PCT/SE83/00192

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [3]

According to International Patent Classification (IPC) or to both National Classification and IPC 3

A 47 C 19/04 // A 61 G 7/00, B 66 F 3/22

II. FIELDS SEARCHED

Minimum Documentation Searched [4]

Classification System	Classification Symbols
IPC 3	A 47 C 19/00,04, A 61 G 1/02, 7/00, B 66 F 3/22
US Cl	5:63-65; 254:8, 9, 122; 296:20

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [5]

SE, NO, DK, FI classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT [14]

Category *	Citation of Document, [16] with indication, where appropriate, of the relevant passages [17]	Relevant to Claim No. [18]
A	DE, B , 1 082 023 (I TREPEL) 19 May 1960	1
A	FR, A , 1 560 817 (E VON RÜDGISCH) 21 March 1969 See fig 4 and 5	1

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IV. CERTIFICATION

Date of the Actual Completion of the International Search [2]	Date of Mailing of this International Search Report [2]
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Patents cn2637251

Vehicle mounted integrated system folding office desk

Abstract

The utility model discloses a vehicle integrated system foldaway desk, comprising a main desktop and a pair of bolster hinge frames, wherein, an upper fast headstock is fixed on the under the main desktop of the desk, while a lower fast headstock is arranged on the ground, the same sides of the upper and the lower fast headstocks are respectively provided with an upper lifting lead rail and a lower lifting lead rail; the upper end of one side column of the bolster hinge frame is fixed on the upper fast headstock, and the bottom end of one side column of the bolster hinge frame is fixedly connected with a lower lifting slider arranged in the lower lifting lead rail; the upper end of the other side column of the bolster hinge frame is fixedly connected with an upper lifting slider arranged in the upper lifting lead rail, and the end lap of one side column of the bolster hinge frame is fixed on the lower fast headstock; and a lifting control locating device is linked with the upper lifting slider. Furthermore, the desk is furnished with a gas spring which is provided with a buffering and an ancillary shorting function, wherein, the proper position of the downside of the lower fast headstock is provided with a removable slider which is arranged in a movable slideway fixed on the ground, and the brink of the main desktop is furnished with a folding accessory desktop. The use efficiency of spaces in vehicles is improved effectively; furthermore, the lifting of the desk is stable and the moving is convenient.

CN2637251Y

China

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Other languages: Chinese

Inventor: [redacted]

Current Assignee : CHINA MOTOR VEHICLE SAFETY APPRAISAL & DETECTION CENTER

Worldwide applications

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Application CN 03208536 events

2003-08-27	Application filed by CHINA MOTOR VEHICLE SAFETY APPRAISAL & DETECTION CENTER
2003-08-27	Priority to CN 03208536
2004-09-01	Application granted
2004-09-01	Publication of CN2637251Y
2013-08-27	Anticipated expiration
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Claims (9)

Hide Dependent

1, the collapsible desk of a kind of vehicle-mounted integrated system, comprise top table face and a pair of bloster hinge frame, it is characterized in that: be consolidated with upper holder below the top table face of this desk, other has lower fixed frame and places on the ground, and the same side of upper and lower fixed mount is respectively equipped with upper and lower riser guide; The upper end of one side row bloster hinge frame is fixed on the upper holder, and its bottom following lifting slider interior with placing down riser guide is affixed. The upper end of the opposite side row bloster hinge frame last lifting slider interior with placing riser guide is affixed, and its bottom is fixed on the lower fixed frame; Upward lifting slider of detent mechanism interlock is handled in one lifting that is fixed on the upper holder.

2, the collapsible desk of vehicle-mounted integrated system according to claim 1, it is characterized in that: the appropriate location of described lower fixed frame bottom side is provided with moving slider, and this moving slider places in the mobile slideway that fixes on the ground.

3, the collapsible desk of vehicle-mounted integrated system according to claim 1 is characterized in that: the gas spring of also being furnished with buffering and supplemental support effect on its bloster hinge frame.

4, the collapsible desk of vehicle-mounted integrated system according to claim 1 is characterized in that: described top table face avris is furnished with collapsible pair of desktop.

5, the collapsible desk of vehicle-mounted integrated system according to claim 1, it is characterized in that: described lifting is handled detent mechanism and is comprised last handle, extension spring, digonal link and the intermediate rod that is coupled to each other, the tail end of intermediate rod is fixed on the upper holder, the head end side is except that linking with digonal link, also with a small rocker loose joint that is fixed on the upper holder, the appropriate location of the intermediate rod central segment lifting locating dowel pin interior with being interspersed in lifting slider connects.

6, the collapsible desk of vehicle-mounted integrated system according to claim 2, it is characterized in that: the lower fixed frame appropriate position is provided with mobile positioning mechanism.

7, the collapsible desk of vehicle-mounted integrated system according to claim 2 is characterized in that: be provided with block at described mobile slideway head, tail end.

8, the collapsible desk of vehicle-mounted integrated system according to claim 6, it is characterized in that: described mobile positioning mechanism comprises that one can pull the mobile pull bar of support arm, support arm tail end and lower fixed frame loose joint, suitable point on the support arm running fix pin interior with being interspersed in lower fixed frame connects, and is with stage clip on the running fix pin.

9, the collapsible desk of vehicle-mounted integrated system according to claim 8, it is characterized in that: the stage clip that is with on the described running fix pin is pushed down it by the stage clip cover plate.

Description

The collapsible desk of vehicle-mounted integrated system

Technical field

The utility model relates to the collapsible desk of a kind of vehicle-mounted integrated system.

Background technology

The interior desk of existing special vehicle car is fixed type or an end is fixed, an end is collapsible, and the former not only takes up room greatly, and the two is all not removable, makes troubles for occupant's activity.

Summary of the invention

The purpose of this utility model provides the collapsible desk of a kind of vehicle-mounted integrated system, and it can improve the service efficiency of interior space.

For achieving the above object, the utility model is taked following design plan: the collapsible desk of a kind of vehicle-mounted integrated system, comprise top table face and a pair of bloster hinge frame, be consolidated with upper holder below the top table face of this desk, other has lower fixed frame and places on the ground, and the same side of upper and lower fixed mount is respectively equipped with upper and lower riser guide; The upper end of one side row bloster hinge frame is fixed on the upper holder, and its bottom following lifting slider interior with placing down riser guide is affixed; The upper end of the opposite side row bloster hinge frame last lifting slider interior with placing riser guide is affixed, and its bottom is fixed on the lower fixed frame; Upward lifting slider of detent mechanism interlock is handled in one lifting that is fixed on the upper holder.

Be the collapsible desk of convenient vehicle-mounted integrated system moving on the ground, the appropriate location of described lower fixed frame bottom side is provided with moving slider, and this moving slider places in the mobile slideway that fixes on the ground.

For making the desktop lifting steady, on the bloster hinge frame of the collapsible desk of vehicle-mounted integrated system, also has been furnished with the gas spring of buffering and supplemental support effect.

For increasing the usable floor area of desktop, can be furnished with collapsible pair of desktop at described top table face avris.

The utility model has the advantages that: can effectively improve the service efficiency of interior space, and the desk lifting is steady, conveniently moving.

Description of drawings

Fig. 1 is the utility model structural representation (front elevation)

Fig. 2 is the utility model structural representation (lateral plan)

Fig. 3 is a local I structural representation among Fig. 1

Fig. 4 is a local II structural representation among Fig. 1

Fig. 5 is a position III place display structure scheme drawing among Fig. 1

Fig. 6 is a local IV structural representation among Fig. 2

Fig. 7 is position IV among Fig. 2, V place structural representation

The specific embodiment

As shown in Figure 1 and Figure 2, the collapsible desk of the vehicle-mounted integrated system of the utility model, comprise top table face 12 and a pair of bloster hinge frame 3, be consolidated with upper holder 2 below the top table face of this desk, other has lower fixed frame 5 and places on the ground, and the same side of upper and lower fixed mount is respectively equipped with upper and lower riser guide 8,8 '; The upper end of one side row bloster hinge frame 3 is fixed on the upper holder 2, and its bottom following lifting slider 7 ' interior with placing down riser guide 8 ' is affixed; The upper end of opposite side row bloster hinge frame 3 ' the last lifting slider 7 interior with placing riser guide 8 is affixed, and its bottom is fixed on the lower fixed frame 5; Upward lifting slider of detent mechanism interlock is handled in one lifting that is fixed on the upper holder.

Described lifting is handled detent mechanism referring to Fig. 3, Fig. 4, it comprises last handle 17, extension spring 18, digonal link 1 and the intermediate rod 6 that is coupled to each other, the tail end of intermediate rod is actively socketed on the connector of installing on the upper holder 2 by small rocker 24, the head end side is except that linking with digonal link, also with small rocker 24 loose joints that are fixed on the upper holder, the appropriate location of the intermediate rod central segment lifting locating dowel pin 26 (it on be with stage clip 25) interior with being interspersed in lifting slider connects.

For making the desktop lifting steady, on the bloster hinge frame of the collapsible desk of vehicle-mounted integrated system, also has been furnished with the gas spring 4 (as shown in fig. 1) of buffering and supplemental support effect.

For increasing the usable floor area of desktop, can be furnished with collapsible pair of desktop 10 at described top table face avris, referring to Fig. 2, paying desktop 10 connects with top table face 12 by folding hinge 11, paying the quantity of desktop and styling design, unrestricted (as: a pair desktop can be set on an avris, dual-side or the four side of top table face as required, and moulding also can be square, semi-circular and other modification type or the like ...).

Be the collapsible desk of convenient vehicle-mounted integrated system moving on the ground, the appropriate location of described lower fixed frame bottom side is provided with moving slider 19, this moving slider combines as a whole by moving slider axis of revolution 20 and lower fixed frame 5, and place in the mobile slideway 15 that fixes on the ground, referring to Fig. 5, it is good that mobile slideway is flats, is fixed in ground.

Referring to shown in Figure 6, be provided with block 16 (this block passes through the firm nail of screw on steel plate at the bottom of the car 13, car bottom lining plate 14) at described mobile slideway head, tail end.

The lower fixed frame appropriate position is provided with mobile positioning mechanism, referring to Fig. 7, described mobile positioning mechanism comprises that one can pull the mobile pull bar 9 of support arm 27, support arm 27 tail ends and lower fixed frame loose joint, suitable point on the support arm running fix pin 22 interior with being interspersed in lower fixed frame connects, be with stage clip 23 on the running fix pin, stage clip is pushed down it by stage clip cover plate 21.

When the utility model uses,, push over folding hinge 11 earlier if want desk is accepted, put down and pay desktop 10, go up handle 17 again, pulling digonal link 1, intermediate rod 6, because the support of small rocker 24 is arranged, intermediate rod is moved down, pulling lifting locating dowel pin 26 moves down, from knock hole, extract, lifting slider 7 moves to right, and bloster hinge frame 3,3 ' is turned up mutually, and desktop descends, become collapsed state, as fine rule institute diagrammatic sketch state among Fig. 1.Last handle 9 is extracted running fix pin 22 from knock hole, promote desk simultaneously and laterally move, and reaches the purpose of vacating central space in the car.Otherwise, if want to make desk to launch to prop, with opposite the getting final product of preceding described control step.

The utility model adopts the combination of master, pair desktop, has increased the usable floor area of desktop, has improved the service efficiency of interior space.It is equipped with air bellow, and is light when desktop is risen, and falls Shi Buhui and forms impact.

The mobile slideway both sides of flats can influence very little to the pedestrian as the press strip of mulching materials such as carpet.

Cited By (8)

Publication number	Priority date	Publication date	Assignee	Title
CN102358216A *	2011-08-14	2012-02-22	苏州中欧汽车有限公司	Bracket of vehicle-mounted folding desk
CN103653780A *	2012-09-24	2014-03-26	勇兴电子(深圳)有限公司	Lifting table
US9924793B2	2012-05-24	2018-03-27	Varidesk, Llc	Adjustable desk platform
CN108143144A *	2017-12-26	2018-06-12	孙海会	A kind of portable Mobile drawing board supporting rack
CN105725517B *	2016-02-29	2018-12-25	博罗县富珍塑胶五金制品有限公司	Foldable shelf
CN110038302A *	2016-12-05	2019-07-19	艾肯运动与健康公司	Running board of running machine weight during compensating operation
CN110843654A *	2019-11-28	2020-02-28	李铮	Type 8 car as a house carriage
CN111407075A *	2020-03-26	2020-07-14	安徽文香信息技术有限公司	Hidden shrink wisdom lectern
Family To Family Citations				

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
CN2637251Y	2004-09-01	Vehicle mounted integrated system folding office desk
CN209369441U	2019-09-10	It is applicable in the all-electric automatic parking robot of different wheelbases and wheelspan
CN207748793U	2018-08-21	Cart jack for engine assembly
CN2721471Y	2005-08-31	Driver's seat of cab in subway
CN209867961U	2019-06-21	Roof of the vehicle flanger
CN102612451A	2012-07-25	Vertically movable personal support system for a vehicle
CN2797163Y	2006-07-19	Trolley for mounting car door
CN2792868Y	2006-07-05	Lifting mechanism on top platform of semi-trailer of transportating vehicle
CN2546263Y	2003-04-23	Retractable step
CN2584515Y	2003-11-05	Hand airstair
CN111747309A	2020-10-09	Multi-section arm connecting rod mechanism
CN2500663Y	2002-07-17	Lifting high altitude operating car
CN2849036Y	2006-12-20	Portable minitype garage
CN2841851Y	2006-11-29	Foldable canvas and tent
CN201037436Y	2008-03-19	Multifunctional support for motor
CN215278055U	2021-12-24	Multifunctional spraying device for metro vehicle framework
CN212328790U	2021-01-12	Multipurpose coating skid for vehicle body

CN2443898Y	2001-08-22	Improved car lifting machine
CN2162388Y	1994-04-20	Guide device of support board for vehicle service machine
CN211423933U	2020-09-04	Automobile instrument board and large screen supporting and lifting mechanism
CN2902796Y	2007-05-23	Towing vehicle working platform
CN206898687U	2018-01-19	A kind of device for realizing multi-vehicle-type soldering cramping apparatus Switch of working position
CN208465176U	2019-02-05	Toy car
CN2691969Y	2005-04-13	Operation supporting mechanism of road vehicle of engineering equipment
CN212706435U	2021-03-16	Positioning tool for motorcycle elbow assembly

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
CN 03208536	2003-08-27	2003-08-27	Vehicle mounted integrated system folding office desk

Applications Claiming Priority (1)

Application	Filing date	Title
CN 03208536	2003-08-27	Vehicle mounted integrated system folding office desk

Legal Events

Date	Code	Title	Description
2004-09-01	C14	Grant of patent or utility model	
2004-09-01	GR01	Patent grant	
2013-11-06	C17	Cessation of patent right	
2013-11-06	CX01	Expiry of patent term	**Expiration termination date**: 20130827 **Granted publication date**: 20040901

Concepts

machine-extracted

Download Filter table

Name	Image	Sections	Count	Query match
buffering		claims,abstract,description	4	0.000
effects		claims,description	4	0.000
supplemental		claims,description	3	0.000

Show all concepts from the description section

[19] 中华人民共和国国家知识产权局

[51] Int. Cl[7]
B60P 3/34
A47B 3/02

[12] 实用新型专利说明书

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[45] 授权公告日 2004 年 9 月 1 日

[11] 授权公告号 CN 2637251Y

[22] 申请日 2003.8.27 [21] 申请号 03208536.2

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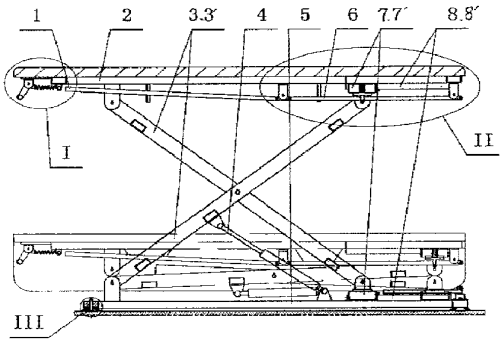
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权利要求书 1 页 说明书 3 页 附图 3 页

[54] 实用新型名称 车载集成系统折叠式办公桌

[57] 摘要

本实用新型公开了一种车载集成系统折叠式办公桌，包括主桌面及一对支撑铰架，该办公桌的主桌面下面固结有上固定架，另具有下固定架置于地面上，上、下固定架的同侧方分别设有上、下升降导轨；一侧列支撑铰架的上端固定在上固定架上，其底端与置于下升降导轨内的下升降滑块固接；另一侧列支撑铰架的上端与置于上升降导轨内的上升降滑块固接，其底端固定在下固定架上；一升降操纵定位机构联动上升降滑块。办公桌同时还配有起缓冲及辅助支撑作用的气弹簧，下固定架底侧的适当位置上设有移动滑块，该移动滑块置于固定在地面上的移动滑道内，在主桌面边侧可配有折叠式副桌面。其可有效提高车内空间的使用效率，且办公桌升降平稳，移动方便。



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1、一种车载集成系统折叠式办公桌，包括主桌面及一对支撑铰架，其特征在于：该办公桌的主桌面下面固结有上固定架，另具有下固定架置于地面上，上、下固定架的同侧方分别设有上、下升降导轨；一侧列支撑铰架的上端固定在上固定架上，其底端与置于下升降导轨内的下升降滑块固接；另一侧列支撑铰架的上端与置于上升降导轨内的上升降滑块固接，其底端固定在下固定架上；一固定在上固定架上的升降操纵定位机构联动上升降滑块。

2、根据权利要求1所述的车载集成系统折叠式办公桌，其特征在于：所述的下固定架底侧的适当位置上设有移动滑块，该移动滑块置于固定在地面上的移动滑道内。

3、根据权利要求1所述的车载集成系统折叠式办公桌，其特征在于：其支撑铰架上还配有起缓冲及辅助支撑作用的气弹簧。

4、根据权利要求1所述的车载集成系统折叠式办公桌，其特征在于：所述的主桌面边侧配有折叠式付桌面。

5、根据权利要求1所述的车载集成系统折叠式办公桌，其特征在于：所述的升降操纵定位机构包括相互联接的上提手柄、拉簧、斜拉杆及横拉杆，横拉杆的尾端固定在上固定架上，头端侧除与斜拉杆相联外，还与一固定在上固定架上的小摇臂活接，横拉杆中心段的适当处与穿插于上升降滑块内的升降定位销联接。

6、根据权利要求2所述的车载集成系统折叠式办公桌，其特征在于：下固定架适当位置处设有移动定位机构。

7、根据权利要求2所述的车载集成系统折叠式办公桌，其特征在于：在所述的移动滑道头、尾端设有挡块。

8、根据权利要求6所述的车载集成系统折叠式办公桌，其特征在于：所述的移动定位机构包括一可扳动支臂的移动拉杆，支臂尾端与下固定架活接，支臂上的适当点与穿插于下固定架内的移动定位销联接，移动定位销上套有压簧。

9、根据权利要求8所述的车载集成系统折叠式办公桌，其特征在于：所述的移动定位销上套有的压簧由压簧盖板将其压住。

车载集成系统折叠式办公桌

技术领域

本实用新型涉及一种车载集成系统折叠式办公桌。

背景技术

现有特种车辆车内办公桌均为固定式或一端固定、一端折叠式，前者不仅占用空间大，且二者均不可移动，给车内人员的活动带来不便。

发明内容

本实用新型的目的是提供一种车载集成系统折叠式办公桌，其可提高车内空间的使用效率。

为实现上述目的，本实用新型采取以下设计方案：一种车载集成系统折叠式办公桌，包括主桌面及一对支撑铰架，该办公桌的主桌面下面固结有上固定架，另具有下固定架置于地面上，上、下固定架的同侧方分别设有上、下升降导轨；一侧列支撑铰架的上端固定在上固定架上，其底端与置于下升降导轨内的下升降滑块固接；另一侧列支撑铰架的上端与置于上升降导轨内的上升降滑块固接，其底端固定在下固定架上；一固定在上固定架上的升降操纵定位机构联动上升降滑块。

为方便车载集成系统折叠式办公桌在地面上的移动，所述的下固定架底侧的适当位置上设有移动滑块，该移动滑块置于固定在地面上的移动滑道内。

为使桌面升降平稳，在车载集成系统折叠式办公桌的支撑铰架上还配有起缓冲及辅助支撑作用的气弹簧。

为增大桌面的使用面积，在所述的主桌面边侧可配有折叠式付桌面。

本实用新型的优点是：可有效提高车内空间的使用效率，且办公桌升降平稳，移动方便。

附图说明

图 1　为本实用新型结构示意图（前视图）

图 2　为本实用新型结构示意图（侧视图）

图 3 为图 1 中局部 I 结构示意图

图 4 为图 1 中局部 II 结构示意图

图 5 为图 1 中部位III处显示结构示意图

图 6 为图 2 中局部IV结构示意图

图 7 为图 2 中部位IV、V处结构示意图

具体实施方式

如图 1、图 2 所示，本实用新型车载集成系统折叠式办公桌，包括主桌面 12 及一对支撑铰架 3，该办公桌的主桌面下面固结有上固定架 2，另具有下固定架 5 置于地面上，上、下固定架的同侧方分别设有上、下升降导轨 8、8'；一侧列支撑铰架 3 的上端固定在上固定架 2 上，其底端与置于下升降导轨 8'内的下升降滑块 7'固接；另一侧列支撑铰架 3'的上端与置于上升降导轨 8 内的上升降滑块 7 固接，其底端固定在下固定架 5 上；一固定在上固定架上的升降操纵定位机构联动上升降滑块。

所述的升降操纵定位机构参见图 3、图 4，它包括相互联接的上提手柄 17、拉簧 18、斜拉杆 1 及横拉杆 6，横拉杆的尾端通过小摇臂 24 活接在上固定架 2 上安装的联接件上，头端侧除与斜拉杆相联外，还与一固定在上固定架上的小摇臂 24 活接，横拉杆中心段的适当处与穿插于上升降滑块内的升降定位销 26（其上套有压簧 25）联接。

为使桌面升降平稳，在车载集成系统折叠式办公桌的支撑铰架上还配有起缓冲及辅助支撑作用的气弹簧 4（如图 1 中所示）。

为增大桌面的使用面积，在所述的主桌面边侧可配有折叠式付桌面 10，参见图 2，付桌面 10 通过折叠合页 11 与主桌面 12 联接，付桌面的数量及造型设计不受限制（如：按需可在主桌面的一边侧、两侧边或四侧边上设置付桌面，造型亦可为方形、半圆型及其它修饰型等等……）。

为方便车载集成系统折叠式办公桌在地面上的移动，所述的下固定架底侧的适当位置上设有移动滑块 19，该移动滑块通过移动滑块回转轴 20 与下固定架 5 联为一体，并置于固定在地面上的移动滑道 15 内，参见图 5，移动滑道呈扁平状为佳，固定于地面。

参见图 6 所示，在所述的移动滑道头、尾端设有挡块 16（该挡块通过螺钉牢固的钉在车底钢板 13、车底衬板 14 上）。

下固定架适当位置处设有移动定位机构，参见图 7，所述的移动定位机构包括一可扳动支臂 27 的移动拉杆 9，支臂 27 尾端与下固定架活接，支臂上的适当点与穿插于下固定架内的移动定位销 22 联接，移动定位销上套有压簧 23，压簧由压簧盖板 21 将其压住。

本实用新型使用时，若想将桌子收起来，先推倒折叠合页 11，放下付桌面 10，再上提手柄 17，拉动斜拉杆 1、横拉杆 6，由于有小摇臂 24 的支撑，使横拉杆下移，拉动升降定位销 26 下移，从定位孔中拔出，升降滑块 7 右移，支撑铰架 3、3'相互折起，桌面下降，成收起状态，如图 1 中细线所示图状态。上提手柄 9，使移动定位销 22 从定位孔中拔出，同时推动桌子做横向移动，达到空出车内中部空间的目的。反之，若想使桌子展开支起，与前所述的操作步骤相反即可。

本实用新型采用主、付桌面的组合，增加了桌面的使用面积，提高了车内空间的使用效率。其装有空气弹簧，使桌面升起时轻便，降下时不会形成冲击。

扁平状的移动滑道两边可做为地毯等地面覆盖物的压条，对过往行人影响很小。

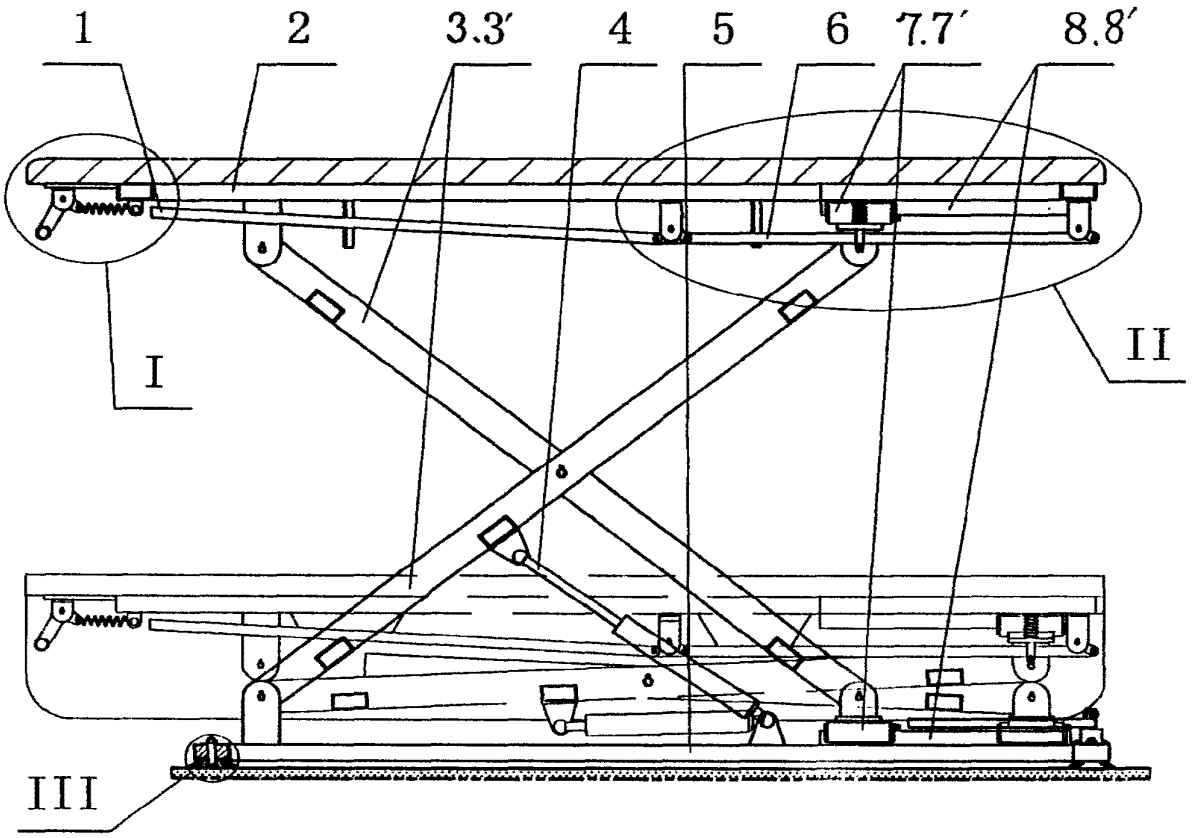


图 1

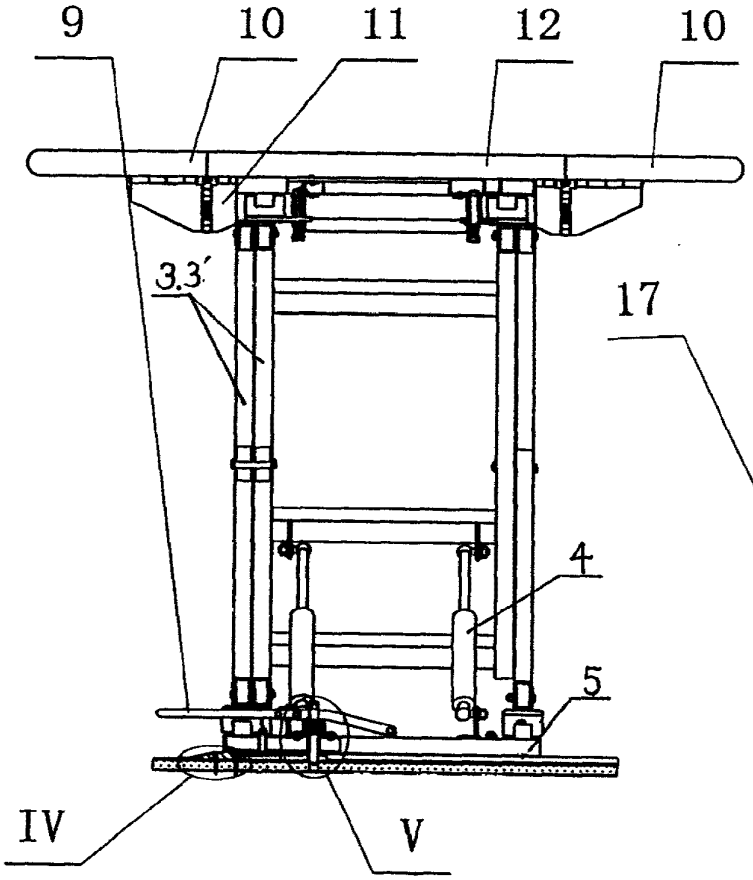


图 2

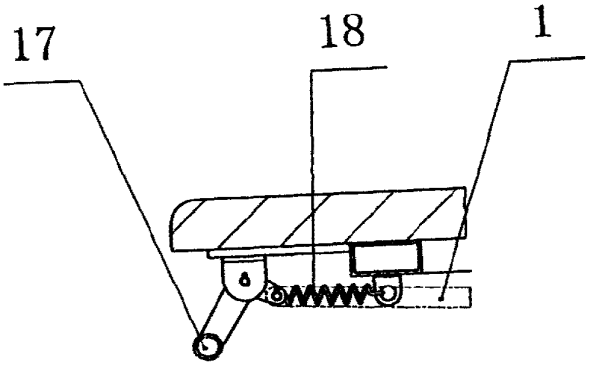


图 3

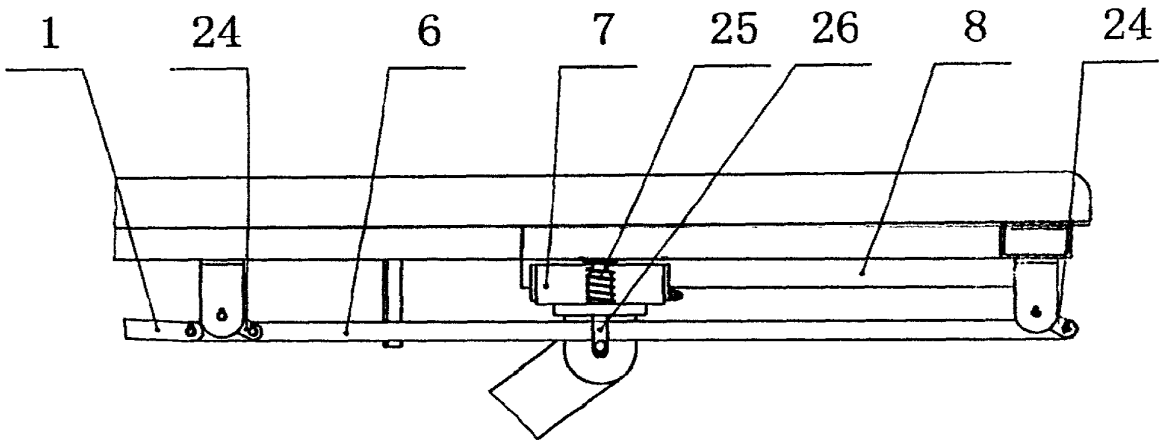


图 4

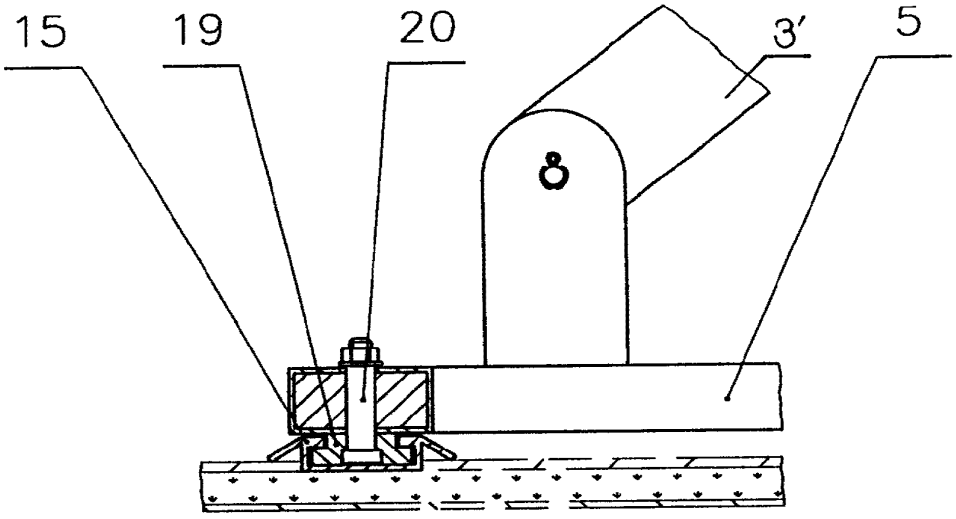


图 5

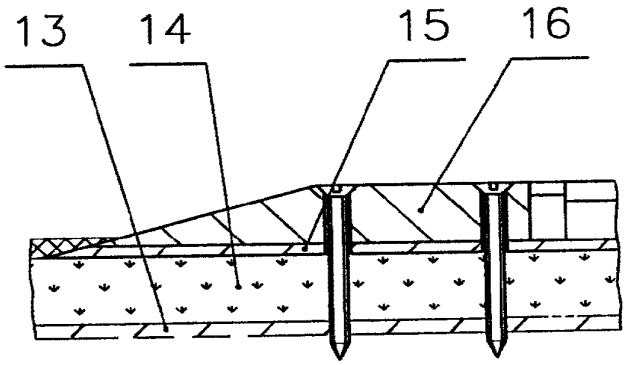


图 6

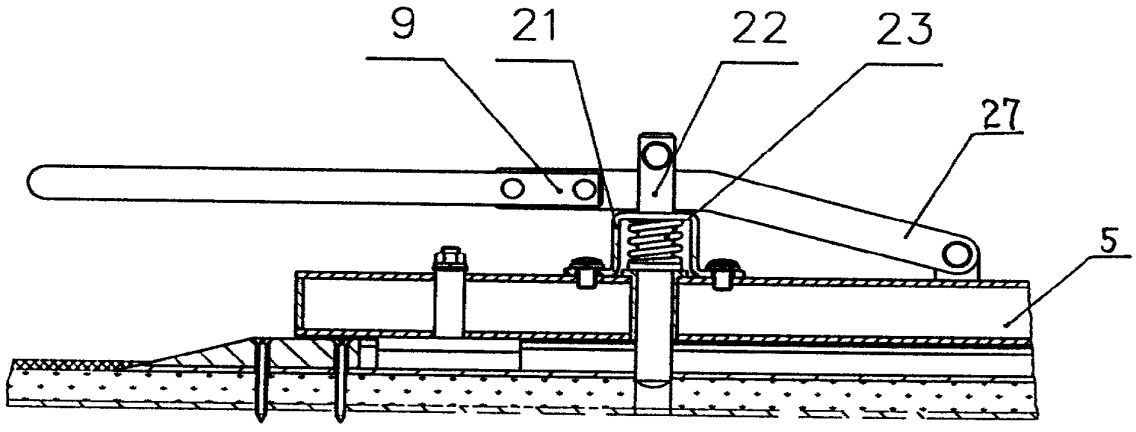


图 7

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IRISH PATENTS OFFICE Espacenet

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Lifting workbench

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- cooperative:

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Abstract of CN105124920 (A)

The invention provides a lifting workbench. The lifting workbench comprises a lower support and an upper support. At least one set of X-shaped lifting mechanism is arranged between the lower support and the upper support. The lifting workbench further comprises elastic components, the first end of each elastic component is connected to the position between two endpoints of a corresponding first supporting rod or a corresponding second supporting rod, and the second end of each elastic component is connected to the lower support or a second hinged base capable of sliding relative to the lower support. The elastic components are used for offsetting or partially offsetting the weight borne by the upper support. According to the lifting workbench, the elastic components are used for providing supporting force and offsetting or partially offsetting the weight borne by the upper support, in this way, the workbench can stay at any height, the structure is simple and cost is low. Moreover, the X-shaped lifting mechanisms are adopted, the front-back position of the upper support cannot be changed in the lifting process of the upper support, and practicability is achieved.

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DESCRIPTION CN105124920A

10 Lifting table

[0001]

14 Technical field:

[0002]

18 The invention relates to a lifting workbench.

[0003]

22 Background technique:

[0004]

26 Most of the elevating workbenches in the prior art use mechanical springs or torsion springs to provide upward elastic force, and generally use the structure of a support rod to make the table surface rise or fall relative to the lower support, which is complicated in structure and high in cost.

[0005]

32 Invention content:

[0006]

36 The technical problem solved by the present invention is to overcome the existing technical defects and provide a lifting workbench with simple structure and low cost.

[0007]

41 The technical solution provided by the present invention is as follows: the present invention provides a lifting workbench, which includes a lower support and an upper support, and at least one set of X-shaped lifting mechanisms is arranged between the lower support and the upper support. It is: each group of X-shaped lifting mechanisms includes two supporting rods hinged to each other in the middle position to form an X-shaped: a first supporting rod and a second supporting rod, and the lower support is provided with a first support fixed on the lower support. A hinge seat and a second hinge seat slidable relative to the lower support, the upper support is provided with a third hinge seat fixed on the upper support and a fourth hinge seat slidable relative to the upper support, so The lower end of the first support rod is hinged with the first hinge seat, the upper end is hinged with the fourth hinge seat, the lower end of the second support rod is hinged with the second hinge seat, and the upper end is hinged with the third hinge seat. It also includes an elastic element, the first end of the elastic element is connected between the two ends of the first support rod or the second support rod, and the second end of the elastic element is connected to the lower support or is slidable relative to the lower support On the second hinge seat, the elastic element is used to offset or partially offset the load bearing of the upper support.

[0008]

58 After adopting the above structure, the present invention has the following advantages: the present invention provides the supporting force through the elastic element, which is used to offset or partially offset the load bearing of the upper support, so that the worktable can be kept at any height, the structure is simple, and the cost is low.

62 Moreover, with this X-shaped lifting mechanism, the front and rear positions of the upper bearing will not change during the lifting and lowering process of the upper bearing, which is more practical.

[0009]

67 Preferably, the elastic element is arranged between the lower support and the first support rod, the first end of the elastic element is hinged with the lower support, and the second end of the elastic element is hinged with the first support rod.

[0010]

73 The elastic element is arranged between the second hinge base and the second support rod, the first end of the elastic element is hinged with the second hinge base, and the second end of the elastic element is hinged with the second support rod.

[0011]

79 The elastic element is a compressed gas spring or a mechanical compression spring.

[0012]

83 The elastic element is arranged between the lower support and the second support rod, the first end of the elastic element is hinged with the lower support, and the second end of the elastic element is hinged with the second support rod.

[0013]

89 The elastic element is arranged between the second hinge base and the first support rod, the first end of the elastic element is hinged with the second hinge base, and the second end of the elastic element is hinged with the first support rod.

[0014]

95 The elastic element is a tension gas spring or a tension spring.

[0015]

99 The upper support is provided with a slide rail, the fourth hinge seat slides in the slide rail, and the fourth hinge seat is provided with a bar-shaped sliding block along the direction of the slide rail, and the sliding block is arranged along the direction of the slide rail. Several slots are arranged in the sliding direction of the four hinged bases, and a pin is also arranged on the upper support.

103 With this structure, when the upper support is lifted to a certain position, the pin can be inserted into the slotted hole to fix the lifting position of the upper support. Pull out the middle, you can continue to adjust the height of the upper support.

[0016]

109 A table board is also arranged on the upper support, and a keyboard support is arranged under the table board, and the keyboard support, the table board and the upper support move synchronously.

111 Use the keyboard tray to hold the keyboard.

[0017]

115 There are two groups of the X-type lifting mechanisms, which are respectively arranged on both sides of the upper support, and the two groups of X-type lifting mechanisms are connected with a horizontal plate.

117 By adopting this structure, the X-shaped lifting mechanisms on both sides of the upper support can move synchronously, and the strength of the lifting table can also be strengthened.

[0018]

122 Description of drawings:

[0019]

126 Accompanying drawing 1 is the structural representation of the front of the present invention;

[0020]

130 Accompanying drawing 2 is the structural representation of the back of the present invention;

[0021]

134 Accompanying drawing 3 is one of embodiment;

[0022]

138 Accompanying drawing 4 is the second embodiment;

[0023]

142 Accompanying drawing 5 is the third embodiment;

[0024]

146 Accompanying drawing 6 is the fourth embodiment;

[0025]

150 Accompanying drawing 7 is the fifth embodiment;

[0026]

154 Accompanying drawing 8 is the sixth embodiment;

[0027]

158 9 is a schematic structural diagram of a locking mechanism;

[0028]

162 FIG. 10 is a schematic view of the enlarged structure of the position A in FIG. 9.

[0029]

166 As shown in the picture: 1. Upper support, 1.1, Table board, 1.2, Keyboard tray, 1.3, Slide rail, 2. Lower support, 3. First support rod, 4. Second support rod, 5. Second hinge Seat, 6, first hinge seat, 7, third hinge seat, 8, fourth hinge seat, 9, elastic element, 9.1, gas spring, 9.2, spring, 10, horizontal plate, 11, wrench, 12, cable , 13, slider, 14, slot, 15, pin.

[0030]

173 Detailed ways

[0031]

177 The present invention is described in detail below in conjunction with the accompanying drawings and specific embodiments:

[0032]

182 As shown in Figures 1 to 10: the present invention provides a lifting workbench, which includes a lower support 2 and an upper support 1, and at least one set of X-shaped supports is arranged between the lower support 2 and the upper support 1 Lifting mechanism, each group of X-shaped lifting mechanism includes two supporting rods hinged to each other in the middle position to form an X-shaped: a first supporting rod 3 and a second supporting rod 4, the lower support 2 is provided with a lower support fixed on the lower support The upper first hinged seat 6 and the second hinged seat 5 slidable relative to the lower support 2, the upper support 1 is provided with a third hinged seat 7 fixed on the upper support 1 and relative to the upper support The seat 1 is a slidable fourth hinge seat 8, the lower end of the first support rod 3 is hinged with the first hinge seat 6, the upper end is hinged with the fourth hinge seat 8, and the lower end of the second support rod 4 is hinged with the second hinge The seat 5 is hinged, and the upper end is hinged with the third hinge seat 7. The lifting table also includes an elastic element 9, and the first end of the elastic element 9 is connected to the two ends of the first support rod 3 or the second support rod 4. Between the end points, the second end of the elastic element 9 is connected to the lower support 2 or the second hinge base 5 slidable relative to the lower support 2 , and the elastic element 9 is used to offset or partially offset the load bearing of the upper support 1 .

[0033]

200 During the lifting of the upper support, the second hinged base 5 and the fourth hinged base 8 are slidable relative to the lower support and the upper support respectively, so that the X-shaped lifting mechanism can be adjusted to make the upper support rise and fall.

[0034]

206 3 is one of the embodiments. In this embodiment, the elastic element 9 is a gas spring 9.1, the first end of the gas spring 9.1 is connected between the two ends of the first support rod 3, and the first end of the gas spring 9.1 The two ends are connected to the lower support 2 .

209 In this embodiment, the gas spring is a compressed gas spring, that is, the gas spring provides upward elastic force.

[0035]

214 Fig. 4 shows the second embodiment. In this embodiment, the elastic element 9 is a gas spring 9.1, the first end of the gas spring 9.1 is connected between the two ends of the second strut 4, and the first end of the gas spring 9.1 The two ends are connected to the second hinge base 5 .

217 In this embodiment, the gas spring is a compressed gas spring, that is, the gas spring provides upward elastic force.

[0036]

222 5 shows the third embodiment. In this embodiment, the elastic element 9 is a spring 9.2, the first end of the spring 9.2 is connected between the two ends of the second support rod 4, and the second end of the spring 9.2 is connected On the lower support 2, in this embodiment, the spring 9.2 is a tension spring.

225 That is, the spring provides the pulling force to contract.

[0037]

229 6 shows the fourth embodiment. In this embodiment, the elastic element 9 is a spring 9.2, the first end of the spring 9.2 is connected between the two ends of the first support rod 3, and the second end of the spring 9.2 is connected On the upper support 1, in this embodiment, the spring 9.2 is a tension spring.

232 That is, the spring provides the pulling force to contract.

233 It can be seen that this embodiment has the same structure as the third embodiment, but is symmetrical with the third embodiment, that is, the upper support 1 in this embodiment is regarded as the lower support 2 in the third embodiment.

236 Considering the first support rod 3 in this embodiment as the second support rod 4 in the third embodiment, the structure is the same as that of the third embodiment.

238 This symmetrical structure with the third embodiment should also fall within the protection scope of the present application.

[0038]

243 FIG. 7 shows the fifth embodiment, which is a symmetrical structure of the first embodiment.

[0039]

247 FIG. 8 shows the sixth embodiment. which is the symmetrical structure of the second embodiment.

[0040]

251 The embodiments of the present application include, but are not limited to, the foregoing embodiments.

[0041]

255 As shown in Figures 9-10, the upper support 1 is provided with a slide rail 1.3, the fourth hinge base 8 slides in the slide rail 1.3, and the fourth hinge base 8 is provided with a slide rail 1.3 along the direction A bar-shaped sliding block 13, the sliding block 13 moves synchronously with the fourth hinge seat 8, the sliding block 13 is provided with a number of slot holes 14 along the sliding direction of the fourth hinge seat 8, and the upper support 1 A pin 15 is also provided, and the pin 15 is controlled by a pull cable 12 and a wrench 11 for controlling the pin 15 to be inserted into the slot 14 or disengaged from the slot 14 .

261 With this structure, when the upper support is lifted to a certain position, the pin can be inserted into the slotted hole to fix the lifting position of the upper support. Pull out the middle, you can continue to adjust the height of the upper support.

264 The structure provides a locking mechanism for the lifting table, which can be locked when the table rises to a certain height to prevent the table from falling.

[0042]

269 The upper support 1 is also provided with a table board 1.1, and a keyboard support 1.2 is arranged below the table board 1.1. The keyboard support 1.2, the table board 1.1 and the upper support 1 move synchronously.

271 If the upper support 1 is placed on the bottom and the lower support 2 is placed on the top, the table board and the keyboard tray can be arranged on the lower support 2, and this structure is actually the same as the structure described in this application.

[0043]

277 There are two groups of the X-type lifting mechanisms, which are respectively arranged on both sides of the upper support 1, and the two groups of X-type lifting mechanisms are connected by a horizontal plate 10.

279 By adopting this structure, the X-shaped lifting mechanisms on both sides of the upper support can move synchronously, and the strength of the lifting table can also be strengthened.

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CLAIMS CN105124920A

1.

13 A lifting workbench includes a lower support and an upper support, at least one group of X-shaped lifting mechanisms is arranged between the lower support and the upper support, and it is characterized in that: each group of X-shaped lifting mechanisms includes Two intermediate positions are hinged to each other to form an X-shaped support rod: a first support rod and a second support rod, and the lower support is provided with a first hinged seat fixed on the lower support and a sliding relative to the lower support The second hinge seat, the upper support is provided with a third hinge seat fixed on the upper support and a fourth hinge seat slidable relative to the upper support, the lower end of the first support rod is hinged with the first hinge The seat is hinged, the upper end is hinged with the fourth hinge seat, the lower end of the second support rod is hinged with the second hinge seat, and the upper end is hinged with the third hinge seat. One end is connected between the two end points of the first support rod or the second support rod, and the second end of the elastic element is connected to the lower support or the second hinge seat slidable relative to the lower support, the elastic element Used to offset or partially offset the upper bearing load.

2.

28 The lifting workbench according to claim 1, wherein the elastic element is arranged between the lower support and the first support rod, the first end of the elastic element is hinged with the lower support, and the second end of the elastic element is hinged to the lower support. The end is hinged with the first support rod.

3.

34 The lifting workbench according to claim 1, wherein the elastic element is arranged between the second hinge seat and the second support rod, the first end of the elastic element is hinged with the second hinge seat, and the elastic element The second end of the is hinged with the second strut.

4.

40 The lifting table according to claim 2 or 3, wherein the elastic element is a compressed gas spring or a mechanical compression spring.

5.

45 The lifting workbench according to claim 1, wherein the elastic element is arranged between the lower support and the second support rod, the first end of the elastic element is hinged with the lower support, and the second end of the elastic element is hinged to the lower support. The end is hinged with the second strut.

6.

51 The lifting workbench according to claim 1, wherein the elastic element is arranged between the second hinge seat and the first support rod, the first end of the elastic element is hinged with the second hinge seat, and the elastic element The second end of the is hinged with the first strut.

7.

57 The lifting workbench according to claim 5 or 6, wherein the elastic element is a tension gas spring or a tension spring.

8.

62 The lifting workbench according to claim 1, wherein the upper support is provided with a slide rail, the fourth hinge base slides in the slide rail, and the fourth hinge base is provided along the slide rail direction. There is a bar-shaped sliding block, and the sliding block is provided with a number of slots along the sliding direction of the fourth hinge seat, and a pin is also provided on the upper support, and the pin passes through a cable and a wrench Control, which is used to control the insertion of the pin into the slot or the disengagement of the slot.

9.

70 The lifting workbench according to claim 1 is characterized in that: a table board is also provided on the upper support, a keyboard support is arranged below the table board, and the keyboard support, the table board and the upper support move synchronously.

10.

76 Lifting workbench according to claim 1, is characterized in that: described X-type lifting mechanism has two groups, which are respectively arranged on both sides of upper support, and between described two groups of X-type lifting mechanism, use horizontal plate to connect.

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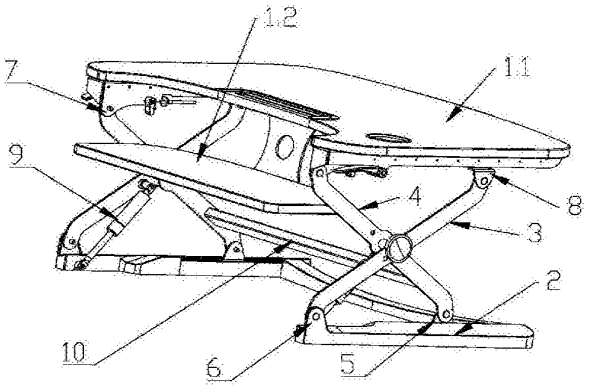
权利要求书1页 说明书3页 附图4页

(54)发明名称

升降工作台

(57)摘要

本发明提供一种升降工作台，它包括下支座、上支座，所述下支座和上支座之间设有至少一组X型升降机构，所述升降工作台还包括弹性元件，所述弹性元件的第一端连接在所述第一支杆或第二支杆的两端点之间，弹性元件的第二端连接在下支座或相对于下支座可滑动的第二铰接座上，所述弹性元件用于抵消或部分抵消上支座承重。本发明通过弹性元件来提供支撑力，用于抵消或部分抵消上支座承重，这样可以将工作台停留在任意高度，结构简单，成本较低。而且采用这种X型升降机构，在上支座升降的过程中，上支座的前后位置不会发生变化，比较实用。



CN 105124920 A

1. 一种升降工作台，它包括下支座、上支座，所述下支座和上支座之间设有至少一组 X 型升降机构，其特征在于：所述每组 X 型升降机构包括两个中间位置相互铰接成 X 型的支杆：第一支杆和第二支杆，所述下支座上设有固定在下支座上的第一铰接座以及相对于下支座可滑动的第二铰接座，所述上支座上设有固定在上支座上的第三铰接座以及相对于上支座可滑动的第四铰接座，所述第一支杆的下端与第一铰接座铰接，上端与第四铰接座铰接，所述第二支杆的下端与第二铰接座铰接，上端与第三铰接座铰接，所述升降工作台还包括弹性元件，所述弹性元件的第一端连接在所述第一支杆或第二支杆的两端点之间，弹性元件的第二端连接在下支座或相对于下支座可滑动的第二铰接座上，所述弹性元件用于抵消或部分抵消上支座承重。

2. 根据权利要求 1 所述的升降工作台，其特征在于：所述弹性元件设置在下支座和第一支杆之间，所述弹性元件的第一端与下支座铰接，弹性元件的第二端与第一支杆铰接。

3. 根据权利要求 1 所述的升降工作台，其特征在于：所述弹性元件设置在第二铰接座和第二支杆之间，所述弹性元件的第一端与第二铰接座铰接，弹性元件的第二端与第二支杆铰接。

4. 根据权利要求 2 或 3 所述的升降工作台，其特征在于：所述弹性元件为压缩气弹簧或机械压缩弹簧。

5. 根据权利要求 1 所述的升降工作台，其特征在于：所述弹性元件设置在下支座和第二支杆之间，所述弹性元件的第一端与下支座铰接，弹性元件的第二端与第二支杆铰接。

6. 根据权利要求 1 所述的升降工作台，其特征在于：所述弹性元件设置在第二铰接座和第一支杆之间，所述弹性元件的第一端与第二铰接座铰接，弹性元件的第二端与第一支杆铰接。

7. 根据权利要求 5 或 6 所述的升降工作台，其特征在于：所述弹性元件为拉伸气弹簧或拉簧。

8. 根据权利要求 1 所述的升降工作台，其特征在于：所述上支座上设有滑轨，所述第四铰接座在滑轨中滑动，所述第四铰接座上沿滑轨方向设有条形滑动块，所述滑动块上沿所述第四铰接座的滑动方向设有若干个槽孔，所述上支座上还设有一销子，所述销子通过一拉索及扳手控制，用于控制销子插入槽孔或者脱离槽孔。

9. 根据权利要求 1 所述的升降工作台，其特征在于：所述上支座上还设有桌板，桌板下方设有键盘托，所述键盘托、桌板与上支座同步运动。

10. 根据权利要求 1 所述的升降工作台，其特征在于：所述 X 型升降机构有两组，分别设置在上支座的两边，所述两组 X 型升降机构之间用横板连接。

升降工作台

技术领域：

[0001] 本发明涉及一种升降工作台。

背景技术：

[0002] 现有技术中的升降工作台大部分是利用机械弹簧或者扭簧来提供上升的弹力，并且一般是采用支杆的结构来使得台面相对于下支座上升或下降，结构比较复杂，成本较高。

发明内容：

[0003] 本发明解决的技术问题是，克服现有的技术缺陷，提供一种结构简单、成本较低的升降工作台。

[0004] 本发明提供的技术方案是：本发明提供一种升降工作台，它包括下支座、上支座，所述下支座和上支座之间设有至少一组X型升降机构，其特征在于：所述每组X型升降机构包括两个中间位置相互铰接成X型的支杆：第一支杆和第二支杆，所述下支座上设有固定在下支座上的第一铰接座以及相对于下支座可滑动的第二铰接座，所述上支座上设有固定在上支座上的第三铰接座以及相对于上支座可滑动的第四铰接座，所述第一支杆的下端与第一铰接座铰接，上端与第四铰接座铰接，所述第二支杆的下端与第二铰接座铰接，上端与第三铰接座铰接，所述升降工作台还包括弹性元件，所述弹性元件的第一端连接在所述第一支杆或第二支杆的两端点之间，弹性元件的第二端连接在下支座或相对于下支座可滑动的第二铰接座上，所述弹性元件用于抵消或部分抵消上支座承重。

[0005] 采用上述结构后，本发明具有以下优点：本发明通过弹性元件来提供支撑力，用于抵消或部分抵消上支座承重，这样可以将工作台停留在任意高度，结构简单，成本较低。而且采用这种X型升降机构，在上支座升降的过程中，上支座的前后位置不会发生变化，比较实用。

[0006] 作为优选，所述弹性元件设置在下支座和第一支杆之间，所述弹性元件的第一端与下支座铰接，弹性元件的第二端与第一支杆铰接。

[0007] 所述弹性元件设置在第二铰接座和第二支杆之间，所述弹性元件的第一端与第二铰接座铰接，弹性元件的第二端与第二支杆铰接。

[0008] 所述弹性元件为压缩气弹簧或机械压缩弹簧。

[0009] 所述弹性元件设置在下支座和第二支杆之间，所述弹性元件的第一端与下支座铰接，弹性元件的第二端与第二支杆铰接。

[0010] 所述弹性元件设置在第二铰接座和第一支杆之间，所述弹性元件的第一端与第二铰接座铰接，弹性元件的第二端与第一支杆铰接。

[0011] 所述弹性元件为拉伸气弹簧或拉簧。

[0012] 所述上支座上设有滑轨，所述第四铰接座在滑轨中滑动，所述第四铰接座上沿滑轨方向设有条形滑动块，所述滑动块上沿所述第四铰接座的滑动方向设有若干个槽孔，所述上支座上还设有一销子，所述销子通过一拉索及扳手控制，用于控制销子插入槽孔或者

脱离槽孔。采用这种结构，可以在上支座升降到某个位置时，通过销子插入槽孔中，来固定上支座升降的位置，需要调整位置时，则通过扳手以及拉索将销从槽孔中拉出，则可以继续调节上支座的高度。

[0013] 所述上支座上还设有桌板，桌板下方设有键盘托，所述键盘托、桌板与上支座同步运动。采用键盘托可以放置键盘。

[0014] 所述 X 型升降机构有两组，分别设置在上支座的两边，所述两组 X 型升降机构之间用横板连接。采用这种结构可以使上支座两边的 X 型升降机构同步运动，而且还可以加强升降工作台的强度。

附图说明：

[0015] 附图 1 为本发明正面的结构示意图；

[0016] 附图 2 为本发明背面的结构示意图；

[0017] 附图 3 为实施例之一；

[0018] 附图 4 为实施例之二；

[0019] 附图 5 为实施例之三；

[0020] 附图 6 为实施例之四；

[0021] 附图 7 为实施例之五；

[0022] 附图 8 为实施例之六；

[0023] 附图 9 为锁止机构的结构示意图；

[0024] 附图 10 为图 9 中的 A 处放大结构示意图。

[0025] 如图所示：1、上支座，1.1、桌板，1.2、键盘托，1.3、滑轨，2、下支座，3 第一支杆，4、第二支杆，5、第二铰接座，6、第一铰接座，7、第三铰接座，8、第四铰接座，9、弹性元件，9.1、气弹簧，9.2、弹簧，10、横板，11、扳手，12、拉索，13、滑动块，14、槽孔，15、销子。

具体实施方式

[0026] 下面结合附图和具体实施例对本发明做详细说明：

[0027] 如图 1- 图 10 所示：本发明提供一种升降工作台，它包括下支座 2、上支座 1，所述下支座 2 和上支座 1 之间设有至少一组 X 型升降机构，所述每组 X 型升降机构包括两个中间位置相互铰接成 X 型的支杆：第一支杆 3 和第二支杆 4，所述下支座 2 上设有固定在下支座上的第一铰接座 6 以及相对于下支座 2 可滑动的第二铰接座 5，所述上支座 1 上设有固定在上支座 1 上的第三铰接座 7 以及相对于上支座 1 可滑动的第四铰接座 8，所述第一支杆 3 的下端与第一铰接座 6 铰接，上端与第四铰接座 8 铰接，所述第二支杆 4 的下端与第二铰接座 5 铰接，上端与第三铰接座 7 铰接，所述升降工作台还包括弹性元件 9，所述弹性元件 9 的第一端连接在所述第一支杆 3 或第二支杆 4 的两端点之间，弹性元件 9 的第二端连接在下支座 2 或相对于下支座 2 可滑动的第二铰接座 5 上，所述弹性元件 9 用于抵消或部分抵消上支座 1 承重。

[0028] 在上支座升降的过程中第二铰接座 5 和第四铰接座 8 分别相对于下支座和上支座可滑动，从而可以调节 X 型升降机构，使上支座升降。

[0029] 图 3 为实施例之一、此实施例中，所述弹性元件 9 为气弹簧 9.1、气弹簧 9.1 的第一

端连接在所述第一支杆 3 的两端点之间，气弹簧 9.1 的第二端连接在下支座 2 上。此实施例中所述气弹簧为压缩气弹簧，即该气弹簧提供向上的弹力。

[0030] 图 4 为实施例之二、此实施例中，所述弹性元件 9 为气弹簧 9.1、气弹簧 9.1 的第一端连接在所述第二支杆 4 的两端点之间，气弹簧 9.1 的第二端连接在第二铰接座 5 上。此实施例中所述气弹簧为压缩气弹簧，即该气弹簧提供向上的弹力。

[0031] 图 5 为实施例之三、此实施例中，所述弹性元件 9 为弹簧 9.2、弹簧 9.2 的第一端连接在所述第二支杆 4 的两端点之间，弹簧 9.2 的第二端连接在下支座 2 上，此实施例中，弹簧 9.2 为拉簧。即该弹簧提供收缩的拉力。

[0032] 图 6 为实施例之四、此实施例中，所述弹性元件 9 为弹簧 9.2、弹簧 9.2 的第一端连接在所述第一支杆 3 的两端点之间，弹簧 9.2 的第二端连接在上支座 1 上，此实施例中，弹簧 9.2 为拉簧。即该弹簧提供收缩的拉力。可以看出该实施例与实施例之三实际上结构相同，只是跟实施例之三为对称结构，即将本实施例中的上支座 1 看成实施例之三中的下支座 2。将本实施例中的第一支杆 3 看成实施例之三中的第二支杆 4，则该结构与实施例之三相同。这种与实施例之三对称的结构，也应在本申请保护范围之内。

[0033] 图 7 为实施例之五，此实施例为实施例之一的对称结构。

[0034] 图 8 为实施例之六，此实施例为实施例之二的对称结构。

[0035] 本申请实施例包括但不限于上述实施例。

[0036] 如图 9-10 所示，所述上支座 1 上设有滑轨 1.3，所述第四铰接座 8 在滑轨 1.3 中滑动，所述第四铰接座 8 上沿滑轨 1.3 方向设有条形滑动块 13，滑动块 13 与第四铰接座 8 同步运动，所述滑动块 13 上沿所述第四铰接座 8 的滑动方向设有若干个槽孔 14，所述上支座 1 上还设有一销子 15，所述销子 15 通过一拉索 12 及扳手 11 控制，用于控制销子 15 插入槽孔 14 或者脱离槽孔 14。采用这种结构，可以在上支座升降到某个位置时，通过销子插入槽孔中，来固定上支座升降的位置，需要调整位置时，则通过扳手以及拉索将销从槽孔中拉出，则可以继续调节上支座的高度。该结构给升降工作台提供了一个锁止机构，可以在工作台上升到一定高度时进行锁止，防止工作台下降。

[0037] 所述上支座 1 上还设有桌板 1.1，桌板 1.1 下方设有键盘托 1.2，所述键盘托 1.2、桌板 1.1 与上支座 1 同步运动。如果将上支座 1 放到下面，将下支座 2 放到上面，则可以在下支座 2 上设置桌板和键盘托，这种结构实际上与本申请所述结构相同。

[0038] 所述 X 型升降机构有两组，分别设置在上支座 1 的两边，所述两组 X 型升降机构之间用横板 10 连接。采用这种结构可以使上支座两边的 X 型升降机构同步运动，而且还可以加强升降工作台的强度。

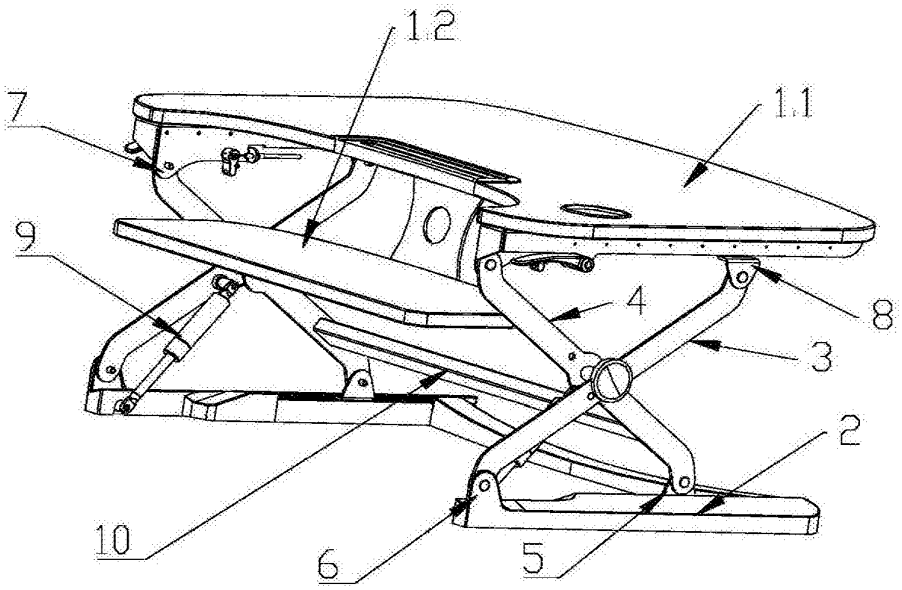


图 1

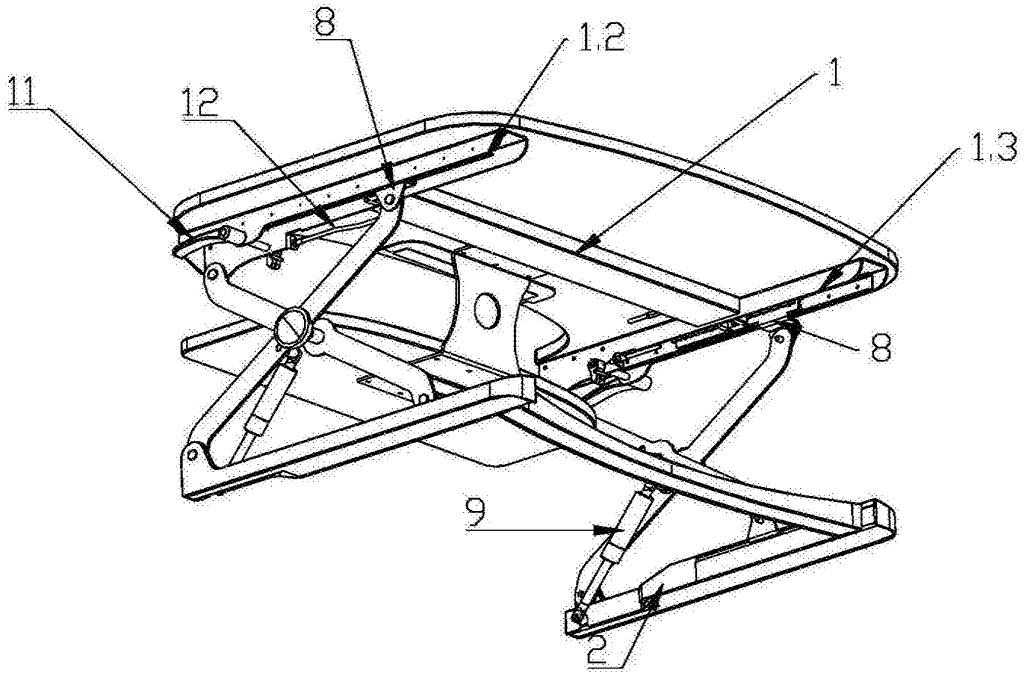


图 2

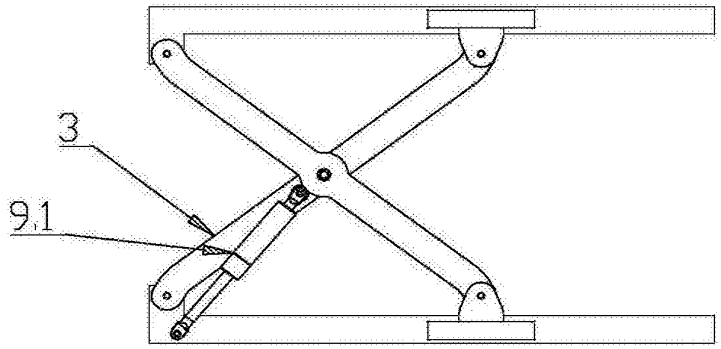


图 3

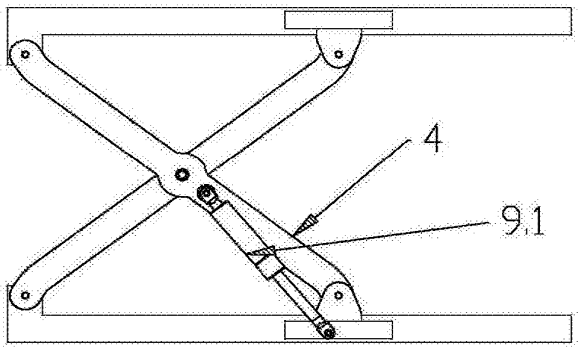


图 4

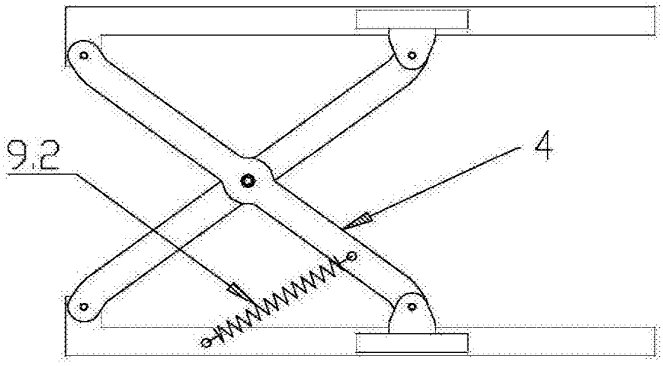


图 5

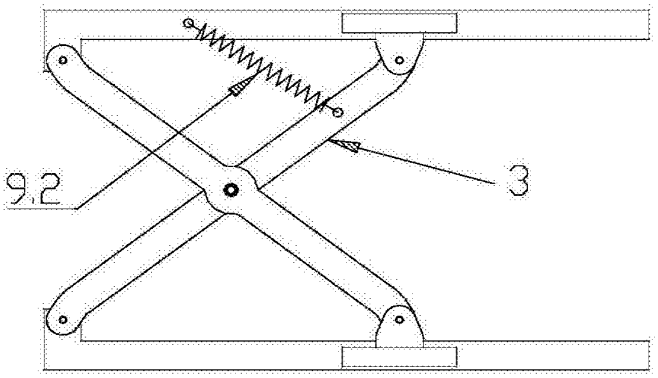


图 6

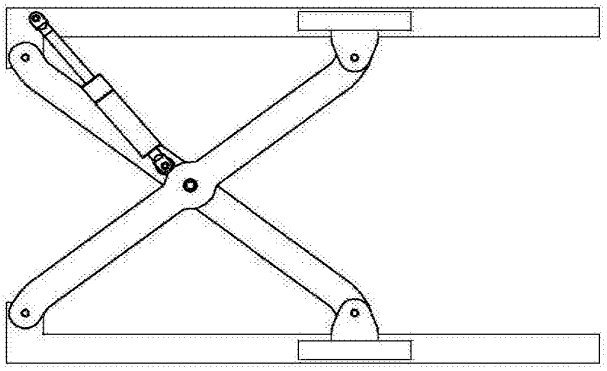


图 7

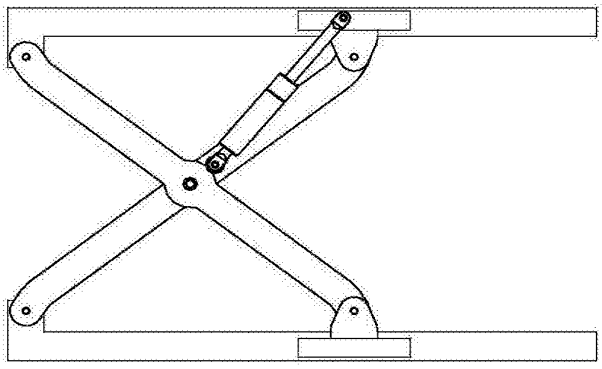


图 8

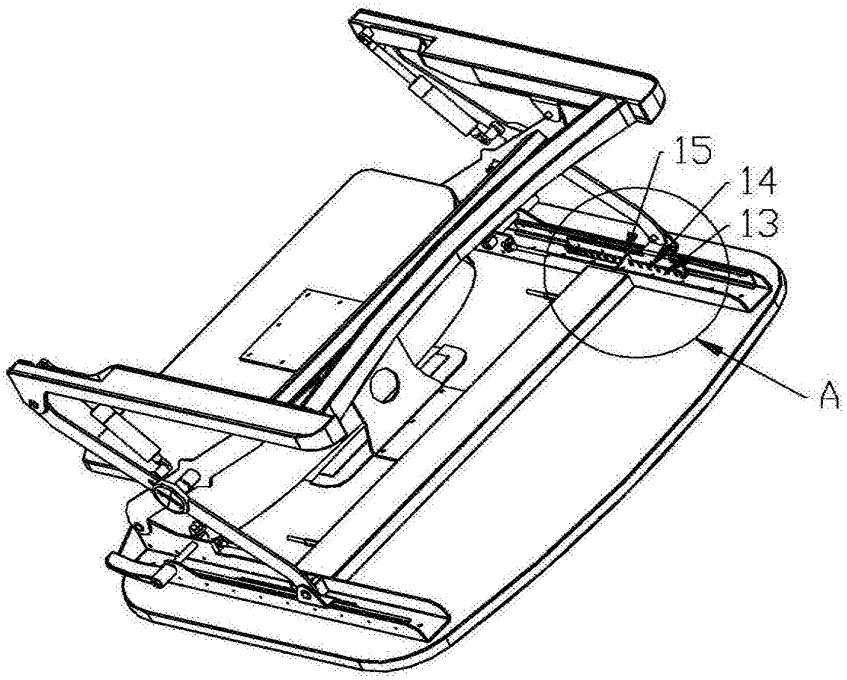


图 9

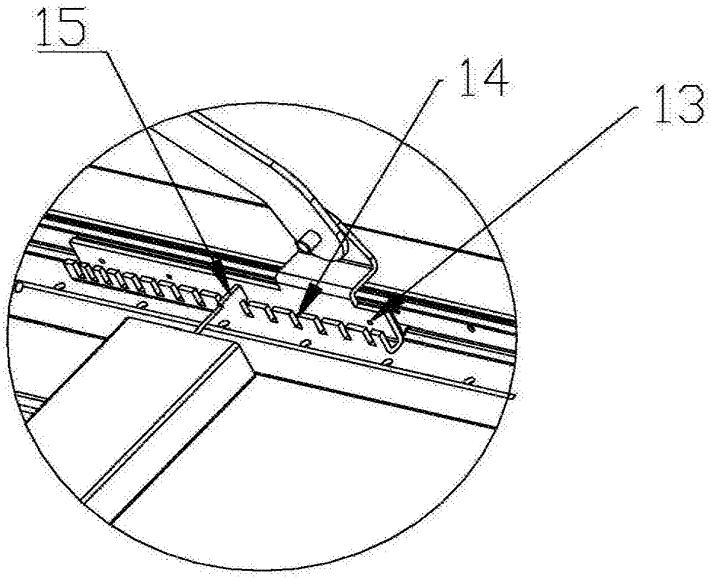


图 10

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY
First Named Inventor/Applicant Name:	Nathan Mark Poniatowski
Filer:	Daniel Thomas Lund
Attorney Docket Number:	1001-001US16

Filed as Small Entity

Filing Fees for Track I Prioritized Examination - Nonprovisional Application under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	80	80
UTILITY SEARCH FEE	2111	1	350	350
UTILITY EXAMINATION FEE	2311	1	400	400
REQUEST FOR PRIORITIZED EXAMINATION	2817	1	2100	2100
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	5	50	250
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
PROCESSING FEE, EXCEPT PROV. APPLS.	2830	1	70	70

Petition:	
Patent-Appeals-and-Interference:	
Post-Allowance-and-Post-Issuance:	
Extension-of-Time:	
Miscellaneous:	
Total in USD ($)	**3250**

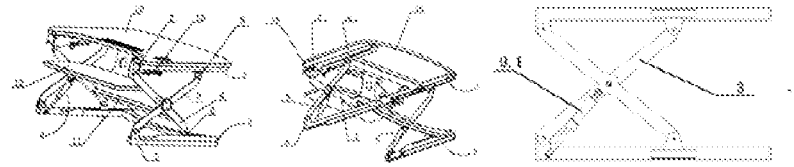
Patents

Elevation working platform

Abstract

An elevation working platform comprises a lower support (2) and an upper support (1). At least one group of X-type elevation mechanisms is provided between the lower support (2) and the upper support (1). The elevation working platform further comprises an elastic element (9). A first end of the elastic element (9) is connected between two end points of a first support rod (3) or a second support rod (4). A second end of the elastic element (9) is connected to the lower support (2) or a second hinging seat (6) capable of sliding relative to the lower support (2). The elastic element (9) supplies a support force for offsetting or partially offsetting a weight borne by the upper support (1), such that the working platform can stay at any height. By means of the X-type elevation mechanisms, the front and back positions of the upper support (1) does not change in an elevating process of the upper support (1), the structure is simple and practical, and the cost is relatively low.

Images (15)



WO2017045506A1
WIPO (PCT)

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Inventor: 项乐宏, 郑祥明, 林涛, 李方圆

Worldwide applications

2016 AU JP WO 2018 US 2019 US 2020 US

Application PCT/CN2016/095619 events

2015-09-18 Priority to CN201520728687.6

2015-09-18 Priority to CN201520728687.6U

2016-08-31 Priority to CN201610378869.9A

2016-08-31 Priority to CN201610378869.9

2016-08-17 Application filed by 乐歌人体工学科技股份有限公司

2017-03-23 Publication of WO2017045506A1

Info: Patent citations (31), Cited by (21), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, PatentScope, Discuss

Classifications

- A47B9/02 Tables with tops of variable height with balancing device, e.g. by springs, by weight

View 11 more classifications

Claims (16)

Hide Dependent

1. An elevating workbench comprising an elevating workbench body, the elevating workbench body comprising an upper support, a lower support, and at least one set of X-type lifting mechanisms connected between the upper support and the lower support, The utility model is characterized in that each set of X-shaped lifting mechanism comprises a first strut and a second strut which are hinged in an X shape in the middle, and the lower abutment is provided with a first hinge seat fixed on the lower support and opposite to the lower support a slidable second hinge seat, the upper support is provided with a third hinge seat fixed on the upper support and a fourth hinge seat slidable relative to the upper support, the lower end of the first support is The first hinge seat is hinged, the upper end is hinged with the fourth hinge seat, the lower end of the second pole is hinged with the second hinge seat, the upper end is hinged with the third hinge seat, and the lifting platform further comprises an elastic element, the elasticity a first end of the element is connected between the two ends of the first strut or the second strut, and the second end of the elastic element is connected to the lower support or the second hinge seat slidable relative to the lower support, The elastic element is used to offset or partially offset the upper bearing load.

2. The elevating table according to claim 1, wherein the elastic member is disposed between the lower support and the first strut, the first end of the elastic member is hinged to the lower support, and the second elastic member is The end is hinged to the first pole.

3. The elevating table according to claim 1, wherein the elastic member is disposed between the second hinge seat and the second strut, and the first end of the elastic member is hinged with the second hinge seat, and the elastic member The second end is hinged to the second rod.

4. A lifting table according to claim 2 or 3, wherein the elastic member is a compressed gas spring or a mechanical compression spring.

5. The lifting table according to claim 1, wherein the elastic member is disposed between the lower support and the second support, the first end of the elastic member is hinged to the lower support, and the second member of the elastic member The end is hinged to the second pole.

6. The lifting table according to claim 1, wherein the elastic member is disposed between the second hinge seat and the first strut, and the first end of the elastic member is hinged with the second hinge seat, and the elastic member The second end is hinged to the first strut.

7. The elevating table according to claim 5 or 6, wherein the elastic member is a tension gas spring or a tension spring.

8. The elevating table according to claim 1, wherein the lower holder is provided with a locking mechanism for restricting the sliding of the second hinge seat.

9. The lifting platform according to claim 8, wherein the lower support is provided with a locking mechanism for restricting the sliding of the second hinge seat, and the first sliding rail is connected to the lower support. The second hinge seat is slidably fitted on the first sliding rail, and the second hinge seat is provided with a plurality of positioning holes distributed along the longitudinal direction thereof; and a box is arranged on the lower support outside the second hinge seat Body, the box body is provided with a movable pin whose free end can be inserted or disengaged from the positioning hole, and the inside of the box body The sliding fit is a sliding plate that can move the movable pin and move the free end of the movable pin away from the positioning hole.

10. The elevating table according to claim 1, wherein the upper support is provided with a locking mechanism for restricting the sliding of the fourth hinge seat.

11. The lifting platform according to claim 10, wherein the upper support is provided with a locking mechanism for restricting the sliding of the fourth hinge seat, and the second sliding rail is connected to the upper support. The fourth hinge seat is slidably fitted on the second sliding rail, and the fourth hinge seat is provided with a plurality of positioning holes distributed along the longitudinal direction thereof; and a box is arranged on the upper support outside the fourth hinge seat The movable body pin having a free end capable of being inserted into or disengaging from the positioning hole is disposed in the casing, and the sliding body of the movable body pin is movable to move the movable pin away from the positioning hole.

12. The elevating table according to claim 9 or 11, wherein the inner space of the casing is matched with a movable pin seat, the movable pin is connected to the movable pin seat, and a return spring is sleeved on the movable pin. One end of the return spring abuts against the inner wall of the movable pin seat, the other end of the return spring abuts against the inner wall of the casing, and when the return spring is in a compressed state, the free end of the movable pin is disengaged from the positioning hole, the movable pin The bottom of the seat is provided with a first guiding inclined surface; the sliding plate is provided with a second guiding inclined surface matched with the first guiding inclined surface, and when the sliding plate slides outside the casing, the second guiding inclined surface is pressed A guide ramp moves the movable pin holder outwardly against the spring force of the return spring.

13. The elevating table according to claim 12, wherein the outer end of the sliding plate is connected to a cable, and the cable is provided with a cable return spring, one end of the cable return spring and the sliding The outer end side wall of the plate abuts, and the other end of the cable return spring abuts against the inner wall of the casing; the upper support is connected with a wrench, and the wrench is connected with the outer end of the cable.

14. The elevating table according to claim 1, wherein the at least one set of X-shaped lifting mechanisms are two sets of X-shaped lifting mechanisms, and are respectively disposed on two sides of the upper support, and the two sets of X-shaped lifting and lowering The boards are connected by horizontal plates.

15. The elevating table according to claim 1, wherein said upper support is connected to a table.

16. The elevating table according to claim 15, wherein the elevating table body further comprises a keyboard holder, and the keyboard holder is connected to the upper holder via a connecting plate.

Description

Lifting table
Technical field

The invention relates to the technical field of tablet computer bearing, and in particular to a lifting work platform.

Background technique

With the continuous development of the society, flat panel displays, tablet computers, etc. are becoming more and more popular in ordinary households, and the matching brackets have emerged. The prior art lifting and lowering worktable for carrying tablet computers is generally placed. For use on a table or a table top, most of the prior art lifting tables use mechanical springs or torsion springs to provide a rising spring force, and generally use a strut structure to raise or lower the table top relative to the lower support. More complicated, and the adjustment of the height of the table is more troublesome.

Summary of the invention

The technical problem to be solved by the present invention is to overcome the above drawbacks of the prior art and to provide an elevating worktable with simple structure and convenient height adjustment.

The technical solution of the present invention is to provide an elevating workbench having a structure including an elevating workbench body, the elevating workbench body including an upper support, a lower support, and an upper support and a lower support At least one set of X-shaped lifting mechanisms between the seats, each set of X-shaped lifting mechanisms includes a first strut and a second strut with an X-shaped hinge in the middle, and the second support is fixed on the lower support a hinge seat and a second hinge seat slidable relative to the lower support, the upper seat is provided with a third hinge seat fixed on the upper support and a fourth hinge seat slidable relative to the upper support, The lower end of the first strut is hinged with the first hinge seat, the upper end is hinged with the fourth hinge seat, the lower end of the second strut is hinged with the second hinge seat, and the upper end is hinged with the third hinge seat, the lifting work The table further includes an elastic member, the first end of the elastic member is connected between the two ends of the first strut or the second strut, and the second end of the elastic member is connected to the lower support or opposite to the lower support On the sliding second hinge seat, the elastic element is used The support bearing is canceled or partially canceled.

After adopting the above structure, the lifting table of the present invention has the following advantages compared with the prior art: the lifting table provides a supporting force through the elastic member for canceling or partially canceling the weight of the upper bearing, so that the table can be stopped At any height, the structure is simple, the height adjustment is convenient, and the cost is low; and with the X-shaped lifting mechanism, the front and rear positions of the upper support do not change during the lifting process of the upper support, so it is more practical.

The elastic element is disposed between the lower support and the first support, the first end of the elastic element is hinged to the lower support, and the second end of the elastic element is hinged to the first support.

Preferably, the elastic element is disposed between the second hinge seat and the second strut, the first end of the elastic element Hinged with the second hinged seat, the second end of the elastic element is hinged to the second strut.

Preferably, the elastic element is a compressed gas spring or a mechanical compression spring.

Preferably, the elastic element is disposed between the lower support and the second support, the first end of the elastic element is hinged to the lower support, and the second end of the elastic element is hinged to the second support.

Preferably, the elastic element is disposed between the second hinge seat and the first strut, the first end of the elastic element is hinged with the second hinge seat, and the second end of the elastic element is hinged with the first strut.

Preferably, the elastic element is a tension gas spring or a tension spring.

As an improvement, the lower support is provided with a locking mechanism for restricting the sliding of the second hinge seat.

Preferably, the lower support is provided with a locking mechanism for restricting the sliding of the second hinge seat, which means that the lower support is connected with the first sliding rail, and the second hinge seat is slidingly matched with the first a plurality of positioning holes distributed along the longitudinal direction of the second hinge seat; a lower body of the second hinge seat is provided with a box body, and the box body is provided with a free end energy The movable pin inserted or disengaged from the positioning hole, and the sliding body in the casing cooperates with a sliding plate which can move the movable pin and release the free end of the movable pin from the positioning hole. When the locking mechanism is actuated, the sliding plate is pulled to slide in the casing, and the sliding plate drives the movable pin to move the free end of the movable pin away from the positioning hole. At this time, the second hinge seat slides along the first sliding rail, so that the X-shaped lifting mechanism moves up and down. Height, when the upper support is raised to a certain height, the sliding plate is released, and the free end of the movable pin is inserted into the positioning hole again to restrict the second hinge seat from sliding.

As an improvement, the upper support is provided with a locking mechanism for restricting the sliding of the fourth hinge seat.

The locking mechanism can lock the X-shaped lifting mechanism to fix the height of the table of the X-shaped lifting mechanism, so that the load-bearing capacity of the lifting table can be improved, the locking mechanism is opened, and the elastic force of the elastic member is overcome by hand to adjust the height of the upper support. When the height of the upper support is adjusted, the locking mechanism is released, so that the fourth hinge seat is restricted from sliding, and the X-shaped lifting mechanism is locked. Therefore, the lifting table has a simple structure and convenient height adjustment.

Preferably, the upper support is provided with a locking mechanism for restricting the sliding of the fourth hinge seat, wherein the upper support is connected with a second sliding rail, and the fourth hinge seat is slidably engaged with the second a sliding hole is disposed on the fourth hinge seat, and a plurality of positioning holes are disposed along the longitudinal direction thereof; the upper support on the outer side of the fourth hinge seat is provided with a box body, and the box body is provided with a free end energy The movable pin inserted or disengaged from the positioning hole, and the sliding body in the casing cooperates with a sliding plate which can move the movable pin and release the free end of the movable pin from the positioning hole. When the locking mechanism is actuated, the sliding sliding plate is slid in the casing, and the sliding plate drives the movable pin to move to release the free end of the movable pin from the positioning hole. At this time, the fourth hinge seat slides along the second sliding rail to lift and lower the X-shaped lifting mechanism. Height, when the upper support is lifted to a certain height relative to the lower support, the sliding plate is released, and the free end of the movable pin is again inserted into the positioning hole to restrict the fourth hinge seat from sliding.

Preferably, the inner space of the box cooperates with a movable pin seat, and the movable pin is connected to the movable pin seat, and is live a return spring is sleeved on the driving pin, one end of the return spring abuts against the inner wall of the movable pin seat, the other end of the return spring abuts against the inner wall of the casing, and when the return spring is in a compressed state, the free end of the movable pin is disengaged Positioning hole, the bottom of the movable pin seat is provided with a first guiding inclined surface; the sliding plate is provided with a second guiding inclined surface matched with the first guiding inclined surface, and when the sliding plate slides outside the casing, the The second guiding ramp presses the first guiding ramp to move the movable pin seat outward against the elastic force of the return spring. When the sliding plate is pulled in the casing, the second guiding inclined surface on the sliding plate presses the first guiding inclined surface at the bottom of the movable pin seat to move the movable pin seat outward against the elastic force of the return spring, and the movable pin on the movable pin seat at this time The free end is separated from the positioning hole, the second hinge seat slides along the first sliding rail or the fourth hinge seat slides along the second sliding rail, so that the X-shaped lifting mechanism is lifted and lowered, and when the upper support is lifted to a certain height, the sliding is released. The movable pin is driven by the movable pin under the elastic force of the return spring to cause the free end of the movable pin to be inserted into the positioning hole to restrict the sliding of the second hinge seat or the fourth hinge seat, and at the same time, the first guide slope of the movable pin seat is pressed The second guiding bevel of the sliding plate resets the sliding plate.

The outer end of the sliding plate is connected to a cable, the cable is provided with a spring, one end of the spring abuts against the outer end side wall of the sliding plate, and the other end of the spring abuts against the inner wall of the casing; A wrench is connected to the upper support, and the wrench is connected to the outer end of the cable.

Preferably, the at least one set of X-shaped lifting mechanisms are two sets of X-shaped lifting mechanisms, and are respectively disposed on two sides of the upper support, and the two sets of X-shaped lifting mechanisms are connected by a horizontal plate. With this structure, the X-shaped lifting mechanism on both sides of the upper support can be synchronously moved, and the mechanical strength and stability of the lifting table can be enhanced.

A table is connected to the upper support.

The lifting platform body further includes a keyboard holder, and the keyboard holder is connected to the upper holder through a connecting plate. The keyboard tray can be placed on the keyboard.

DRAWINGS

1 is a schematic structural view of a first embodiment of a lifting workbench according to the present invention.

2 is a schematic view showing the bottom structure of the first embodiment of the lifting work platform of the present invention.

3 is a schematic structural view of a second embodiment of the lifting workbench of the present invention.

4 is a schematic structural view of a third embodiment of the lifting workbench of the present invention.

Figure 5 is a schematic view showing the structure of the fourth embodiment of the lifting table of the present invention.

Figure 6 is a schematic view showing the structure of the fifth embodiment of the lifting table of the present invention.

Figure 7 is a schematic view showing the structure of the sixth embodiment of the lifting table of the present invention.

Figure 8 is a schematic view showing the structure of the seventh embodiment of the lifting table of the present invention.

Figure 9 is a schematic view showing the structure of the locking mechanism of the embodiment of the lifting table of the present invention.

Figure 10 is a schematic view showing the structure of the eighth embodiment of the lifting table of the present invention.

Figure 11 is a schematic view showing the bottom structure of the eighth embodiment of the lifting table of the present invention.

Figure 12 is a schematic view showing the structure of the locking mechanism of the eighth embodiment of the lifting table of the present invention.

Fig. 13 is a schematic enlarged plan view showing a portion A of the lifting table of the present invention in Fig. 12;

Figure 14 is a schematic view showing the assembly structure of the lifting table locking mechanism of the present invention.

Figure 15 is a schematic view showing the assembled structure of the lifting table locking mechanism of the present invention at another angle.

as the picture shows:

1, upper support, 2, lower support, 3, first pole, 4, second pole, 5, first hinge seat, 6, second hinge seat, 7, third hinge seat, 8, first Four hinged seat, 9, elastic element, 9.1, gas spring, 9.2, spring, 10, table, 11, horizontal plate, 12, keyboard support, 13, wrench, 14, first slide, 15, second slide , 16, positioning hole, 17, movable pin, 18, box body, 19, cable return spring, 20, return spring, 21, movable pin seat, 22, first guiding bevel, 23, sliding plate, 24, second Guide the slope.

detailed description

The present invention will be further described in detail below with reference to the accompanying drawings and specific embodiments.

As shown in Figure 1 to Figure 9;

The lifting work platform of the present invention comprises a lifting work platform body, wherein the lifting work platform body comprises an upper support 1, a lower support 2 and at least one set of X-shaped connected between the upper support 1 and the lower support 2 a lifting mechanism, each set of X-shaped lifting mechanism includes a first strut 3 and a second strut 4 hinged in an X shape in the middle, and the lower abutment 2 is provided with a first articulated seat 5 fixed to the lower abutment 2 and a second hinge seat 6 slidable relative to the lower support 2, the upper support 1 being provided with a third hinge seat 7 fixed to the upper support 1 and a fourth hinge slidable relative to the upper support 1 a seat 8, the lower end of the first strut 3 is hinged with the first hinge seat 5, the upper end is hinged with the fourth hinge seat 8, and the lower end of the second strut 4 is hinged with the second hinge seat 6, the upper end and the third The hinged seat 7 is hinged, the lifting table further comprising an elastic element 9, the first end of the elastic element 9 being connected between the two ends of the first strut 3 or the second strut 4, the elastic element 9 The second end is connected to the lower support 2 or to a second hinge seat 6 slidable relative to the lower support 2, said resilient element 9 for counteracting or partially counteracting the upper support Bearing weight.

During the lifting and lowering of the upper support 1, the second hinge seat 6 and the fourth hinge seat 8 are slidable relative to the lower support 2 and the upper support 1, respectively, so that the X-shaped lifting mechanism can be adjusted to raise and lower the upper support 1.

Figure 3 is a second embodiment. in this embodiment, the elastic member 9 is a gas spring 9.1. The first end of the gas spring 9.1 is connected between the two ends of the first strut 3, and the second of the gas spring 9.1. The end is connected to the lower support 2. The gas spring in this embodiment is a compressed gas spring, that is, the gas spring provides an upward elastic force.

Figure 4 is a third embodiment. In this embodiment, the elastic member 9 is a gas spring 9.1. The first end of the gas spring 9.1 is connected between the two ends of the second strut 4, and the second of the gas spring 9.1. The end is connected to the second hinge seat 5. The gas spring in this embodiment is a compressed gas spring, that is, the gas spring provides an upward elastic force.

Figure 5 is a fourth embodiment. In this embodiment, the elastic member 9 is a spring 9.2. The first end of the spring 9.2 is connected between the two ends of the second strut 4, and the second end of the spring 9.2 is connected to the lower end. On the support 2, in this embodiment, the spring 9.2 is a tension spring. That is, the spring provides a contracted pulling force.

Figure 6 is a fifth embodiment. in this embodiment, the elastic member 9 is a spring 9.2. The first end of the spring 9.2 is connected between the two ends of the first strut 3, and the second end of the spring 9.2 is connected. On the upper support 1, in this embodiment, the spring 9.2 is a tension spring. That is, the spring provides a contracted pulling force. It can be seen that the embodiment is substantially the same as the fourth embodiment, except that the fourth embodiment is a symmetrical structure, that is, the upper support 1 in this embodiment is regarded as the lower support 2 in the fourth embodiment. The first strut 3 in this embodiment is regarded as the second strut 4 in the fourth embodiment, and the structure is the same as that in the fourth embodiment. Such a structure symmetrical to the fourth embodiment should also be within the scope of the present application.

FIG. 7 is a sixth embodiment. This embodiment is a symmetric structure of the second embodiment.

Figure 8 is a seventh embodiment. This embodiment is a symmetrical structure of the third embodiment.

Embodiments of the present application include, but are not limited to, the above embodiments.

As shown in the first embodiment shown in FIG. 9, FIG. 14, and FIG. 15, the upper support 1 is provided with a locking mechanism for restricting the sliding of the fourth hinge seat 8. The upper support 1 is provided with a locking mechanism for restricting the sliding of the fourth hinged seat 8, which means that the upper support 1 is connected with a second sliding rail 15, and the fourth hinged seat 8 is slidably engaged with The second sliding rail 15 is provided with a plurality of positioning holes 16 distributed along the longitudinal direction thereof; the upper support 1 outside the fourth hinged seat 8 is provided with a box body 18, The movable body pin 17 of the box body 18 can be inserted into or disengaged from the positioning hole 16 , and the sliding mechanism of the movable body pin 17 can be moved and the free end of the movable pin 17 can be disengaged from the positioning hole 16 . twenty three.

The movable body pin 17 is connected to the movable pin seat 21, and the movable pin 17 is sleeved with a return spring 20, and one end of the return spring 20 is movable. The inner wall of the pin seat 21 abuts, the other end of the return spring 20 abuts against the inner wall of the casing 18, and when the return spring 20 is in a compressed state, the free end of the movable pin 17 is disengaged from the positioning hole 16 of the fourth hinge seat 8, The bottom of the movable pin holder 21 is provided with a first guiding inclined surface 22; the sliding plate 23 is provided with a second guiding inclined surface 24 that cooperates with the first guiding inclined surface 22, and the sliding plate 23 slides outside the casing 18. The second guiding ramp 24 presses the first guiding ramp 22 to move the movable pin holder 21 outward against the elastic force of the return spring 20.

The outer end of the sliding plate 23 is connected with a cable, and the cable is provided with a cable return spring 19, and one end of the cable return spring 19 abuts against the outer end wall of the sliding plate 23, and the cable is reset. The other end of the spring 19 and the inner wall of the casing 18 A wrench 13 is connected to the upper support 1, and the wrench 13 is connected to the outer end of the cable.

The at least one set of X-shaped lifting mechanisms are two sets of X-shaped lifting mechanisms, and are respectively disposed on two sides of the upper support 1, and the two sets of X-shaped lifting mechanisms are connected by a horizontal plate 11 therebetween.

A table 10 is connected to the upper support.

The lifting platform body further includes a keyboard holder, and the keyboard tray 12 is connected to the upper holder 1 through a connecting plate.

As shown in FIG. 10 to FIG. 15, the eighth embodiment of the present invention has the same technical solution as that of the first embodiment, but the lower support 2 is provided with a locking mechanism for restricting the sliding of the second hinge seat 6. The locking mechanism in this embodiment is disposed on the lower support as compared with the first embodiment.

The lower support 2 is provided with a locking mechanism for restricting the sliding of the second hinge seat 6, which means that the lower support 2 is connected with the first slide rail 14, and the second hinge seat 6 is slidably engaged with a first sliding rail 14 is disposed on the second hinged seat 6 and a plurality of positioning holes 16 are disposed along the longitudinal direction thereof. The lower support 2 on the outer side of the second hinged seat 6 is provided with a casing 18. The movable body pin 17 of the box body 18 can be inserted into or disengaged from the positioning hole 16 , and the sliding mechanism of the movable body pin 17 can be moved and the free end of the movable pin 17 can be disengaged from the positioning hole 16 . twenty three.

The movable body pin 17 is connected to the movable pin seat 21, and the movable pin 17 is sleeved with a return spring 20, and one end of the return spring 20 is movable. The inner wall of the pin seat 21 abuts, the other end of the return spring 20 abuts against the inner wall of the casing 18, and when the return spring 20 is in a compressed state, the free end of the movable pin 17 is disengaged from the positioning hole 16 of the second hinge seat 6, The bottom of the movable pin holder 21 is provided with a first guiding inclined surface 22; the sliding plate 23 is provided with a second guiding inclined surface 24 that cooperates with the first guiding inclined surface 22, and when the sliding plate 23 slides outside the casing 18 The second guiding ramp 24 presses the first guiding ramp 22 to move the movable pin holder 21 outward against the elastic force of the return spring.

Patent Citations (31)

Publication number	Priority date	Publication date	Assignee	Title
DE4032674A1 *	1990-10-15	1992-04-16	Prinzess Moebel Gustav Weritz	Folding table supported by scissors-type linkage - has tension spring to provide initial erection force
DE20317442U1 *	2003-11-10	2004-03-18	Konrad Merkt Gmbh	Telescopic furniture part, comprising locking carriage with spring supported pin moving axially inside bars
KR20080005702A *	2006-07-10	2008-01-15	박진영	Height adjustable device for a desk
CN201205081Y *	2008-04-08	2009-03-11	广东省外贸开发公司	Stabiliser angle adjustment device of notebook computer rack
CN204541230U *	2015-04-01	2015-08-12	宁波市镇海拓迪工业产品设计有限公司	A kind of lifting table
CN105124920A *	2015-09-18	2015-12-09	宁波乐歌视讯科技股份有限公司	Lifting workbench
CN204949970U *	2015-09-18	2016-01-13	宁波乐歌视讯科技股份有限公司	Liftable working table
CN105901942A *	2016-05-31	2016-08-31	乐歌人体工学科技股份有限公司	Lifting working platform
Family To Family Citations				
US3282566A *	1964-05-18	1966-11-01	Autoquip Corp	Scissors operating linkage
GB2022958B *	1978-06-10	1982-10-06	Pek Sun Chang	Adjustable height support apparatus
JPS59551982 *	1979-10-04	1984-02-04	Kitagawa Elaborate Mach	
JPS61162495A *	1984-12-29	1986-07-23	Sumitomo Electric Industries	Vertically movable device
DE3608231A1 *	1986-03-12	1987-09-17	Prinzess Moebel Gustav Weritz	Rapid lowering and lifting device for use in small items of furniture
JPH0425003Y2 *	1986-10-24	1992-06-15		
JPH0524693U *	1991-09-09	1993-03-30	上西鉄工株式会社	Table lifter
US5400720A *	1993-04-07	1995-03-28	Vestil Manufacturing Company	Lift and tilt table
JP2560869Y2 *	1993-09-02	1998-01-26	杉安工業株式会社	Workbench
EP0706769A3 *	1994-10-14	2000-09-06	Heinrich Oelschläger Metallwarenfabrik GmbH & Co.	Working height adjustment device for a table desktop or the like
US5709156A *	1995-06-07	1998-01-20	Krueger International, Inc.	Flip-up electrical and communications device for use in combination with a worksurface
US5931103A *	1997-05-21	1999-08-03	Huang; Huei Mien	Computer desk
CA2263062C *	1998-12-03	2006-04-11	Gordon S. Aimond	Flush mounted flip top telecommunication and electrical station for board room tables
US20100012807A1 *	2008-07-17	2010-01-21	K&L Supply Co., Inc.	Lifting apparatus
WO2011150192A2 *	2010-05-28	2011-12-01	Steelcase Inc.	Grommet assembly for work surfaces
JP2012030022A *	2010-07-30	2012-02-16	Fuji Kogyo Kk	Elevating table
CA2814945C *	2012-05-24	2019-04-30	Daniel J. Flaherty	Adjustable desktop platform

US8985031B2 *	2012-06-19	2015-03-24	Michael Gillotti	Desk top elevator
JP2017511246A *	2014-04-14	2017-04-20	エルゴトロン，インコーポレイティド	Height adjustable desktop work surface
US9326598B1 *	2014-06-03	2016-05-03	Virgil J. West	Rise up table top
KR20160100175A *	2015-02-13	2016-08-23	주식회사 삼흥사	Desk possible height-adjustment
KR101527121B1 *	2015-02-27	2015-06-10	에스케이이 주식회사	possible hight adjustment table
US9578961B1 *	2015-08-12	2017-02-28	Target Brands, Inc.	Display shelf for electrically powered consumer products

* Cited by examiner, † Cited by third party

Cited By (21)

Publication number	Priority date	Publication date	Assignee	Title
US10306977B2 *	2017-10-16	2019-06-04	Tsang Wing WONG	Height adjustable desk
FR3078614A1 *	2018-03-12	2019-09-13	Leonidas Kalogeropoulos	ELEMENT FORMING SUBJECT
US10499730B2 *	2015-02-13	2019-12-10	Samhongsa Co., Ltd.	Height-adjustable desk
US11083282B1 *	2020-05-11	2021-08-10	C.D. Great Furniture Co., Ltd.	Height-adjustable desk structure
US11109671B1 *	2020-06-04	2021-09-07	C.D. Great Furniture Co., Ltd.	Height-adjustable table structure
US11134773B1 *	2015-01-24	2021-10-05	Office Kick, Inc.	Desktop workspace that adjusts vertically
Family To Family Citations				
USD845037S1 *	2015-10-26	2019-04-09	Samhongsa Co., Ltd	Desk
CN206586583U *	2016-10-21	2017-10-27	深圳米乔科技有限公司	A kind of same table
CN206338567U *	2017-01-06	2017-07-18	乐歌人体工学科技股份有限公司	Desktop placed type lifting platform
US10463147B2 *	2017-06-09	2019-11-05	Innovative Office Products, Llc	Sit-stand workstation with adjustable keyboard tray
US10893748B1 *	2017-07-08	2021-01-19	Office Kick, Inc.	Height adjustable desktop
AU2018388926A1 *	2017-12-22	2020-07-02	Loctek Ergonomic Technology Corp.	Lifting worktable
US11039684B2 *	2018-06-06	2021-06-22	Innovative Office Products, Llc	Arm-based sit-stand workstation
CN109700183A *	2019-01-31	2019-05-03	黄建明	A kind of placed type lifting platform
USD913019S1 *	2019-03-07	2021-03-16	Key Ovation, Llc	Desk
CN110029475A *	2019-03-21	2019-07-19	青岛海尔洗衣机有限公司	A kind of Controls Palette and clothes treatment device
USD923989S1 *	2019-07-19	2021-07-06	EP Family Corp.	Desk
USD951681S1 *	2020-08-25	2022-05-17	Ningbo Tuotuo River Design Company	Workstation
USD931289S1 *	2020-09-17	2021-09-21	Shenzhen Prime Technology Co., Ltd	Laptop stand
US11311100B1 *	2021-08-28	2022-04-26	Ningbo Sharesun Electronic Technology Co., Ltd.	Double-layer foldable lifting desk with lever type unlocking structure
CN113621492A *	2021-10-11	2021-11-09	天津长芦汉沽盐场有限责任公司	Spherical bottle shaking frame for algae cultivation

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
WO2017045506A1	2017-03-23	Elevation working platform
US9326598B1	2016-05-03	Rise up table top
WO2018072365A1	2018-04-26	Lifting desk
US20150216296A1	2015-08-06	Vertical height work surface adjustment apparatus

CN105124920B	2018-03-23	Self-powered platform
US8276525B2	2012-10-02	Height-adjustable equipment stand
CN105901942B	2018-12-25	Self-powered platform
WO2018010262A1	2018-01-18	Height-adjustable and stand-up computer desk
CN107105893B	2019-11-08	Sliding-pivot mechanism, furniture and the household appliance of the frame body of furniture or household appliance
CN204949970U	2016-01-13	Liftable working table
CN107708486A	2018-02-16	Adjustable for height desk dock
US11291298B2	2022-04-05	Lifting table
TWM549567U	2017-10-01	Thin type lifting platform
CN207626794U	2018-07-20	Same table
CN204599795U	2015-09-02	Foldable multifunctional desk and chair
WO2019001507A1	2019-01-03	Lifting table and support structure thereof
WO2013072945A1	2013-05-23	Fold-up flat bench
JP2011004917A	2011-01-13	Wagon desk
CN206565533U	2017-10-20	A kind of same table with function of containing articles
CN208676540U	2019-04-02	A kind of auxiliary telescopic adjustment structure
CN206290932U	2017-06-30	Double-deck independent-lifting workbench
CN204519803U	2015-08-05	A kind of extraction-type drawing rack
CN214855133U	2021-11-26	Lifting working table
CN212036549U	2020-12-01	Lifting workbench
CN206687419U	2017-12-01	Lifting work table

Priority And Related Applications

Child Applications (1)

Application	Priority date	Filing date	Relation	Title
US15/865,255	2015-09-18	2018-01-09	Continuation	Elevation working platform

Priority Applications (4)

Application	Priority date	Filing date	Title
CN201520728687.0		2015-09-18	
CN201520728687.0U	2015-09-18	2015-09-18	Liftable working table
CN201610378869.9A	2016-05-31	2016-05-31	Self-powered platform
CN201610378869.9		2016-05-31	

Applications Claiming Priority (5)

Application	Filing date	Title
AU2016322281A	2016-08-17	Elevation working platform
JP2018504783A	2016-08-17	Lifting platform
US15/865,255	2018-01-09	Elevation working platform
US16/679,228	2019-11-10	Elevation working platform
US17/060,086	2020-10-01	Elevation working platform

Legal Events

Date	Code	Title	Description
2017-05-10	121	Ep: the epo has been informed by wipo that ep was designated in this application	**Ref document number:** 16845620 **Country of ref document:** EP **Kind code of ref document:** A1
2018-01-29	ENP	Entry into the national phase	**Ref document number:** 2018504753 **Country of ref document:** JP **Kind code of ref document:** A
2018-03-20	NENP	Non-entry into the national phase	**Ref country code:** DE
2018-04-12	ENP	Entry into the national phase	**Ref document number:** 2016322281 **Country of ref document:** AU **Date of ref document:** 20160817 **Kind code of ref document:** A
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Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
elevating		claims,abstract,description	19	0.000
compression		claims,description	2	0.000
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(54) **Title**: ELEVATION WORKING PLATFORM

(54) **发明名称** : 升降工作台

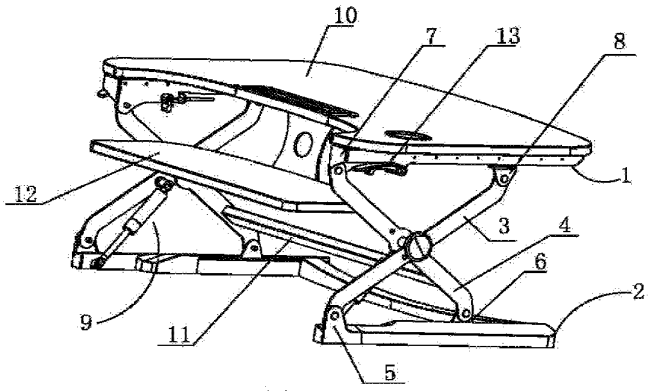


图 1

(57) **Abstract**: An elevation working platform comprises a lower support (2) and an upper support (1). At least one group of X-type elevation mechanisms is provided between the lower support (2) and the upper support (1). The elevation working platform further comprises an elastic element (9). A first end of the elastic element (9) is connected between two end points of a first support rod (3) or a second support rod (4). A second end of the elastic element (9) is connected to the lower support (2) or a second hinging seat (6) capable of sliding relative to the lower support (2). The elastic element (9) supplies a support force for offsetting or partially offsetting a weight borne by the upper support (1), such that the working platform can stay at any height. By means of the X-type elevation mechanisms, the front and back positions of the upper support (1) does not change in an elevating process of the upper support (1), the structure is simple and practical, and the cost is relatively low.

(57) **摘要**:

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RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG)。

本国际公布:
— 包括国际检索报告(条约第 21 条(3))。

一种升降工作台，它包括下支座（2）、上支座（1），所述下支座（2）和上支座（1）之间设有至少一组X型升降机构，所述升降工作台还包括弹性元件（9），所述弹性元件（9）的第一端连接在所述第一支杆（3）或第二支杆（4）的两端点之间，弹性元件（9）的第二端连接在下支座（2）或相对于下支座（2）可滑动的第二铰接座（6）上，弹性元件（9）提供支撑力，用于抵消或部分抵消上支座（1）承重，使得工作台可以停留在任意高度；采用这种X型升降机构，在上支座（1）升降的过程中，上支座（1）的前后位置不会发生变化，结构简单实用，成本较低。

升降工作台

技术领域

本发明涉及平板电脑承载技术领域，具体讲的是一种升降工作台。

背景技术

随着社会的不断发展，平板显示器、平板电脑等在普通家庭中也越来越普及，与之相配套的支架应运而生，现有技术的用于承载平板电脑的升降工作台，其一般放置在桌面或台面上使用，现有技术中的升降工作台大部分是利用机械弹簧或者扭簧来提供上升的弹力，并且一般是采用支杆的结构来使得台面相对于下支座上升或下降，结构比较复杂，且台面高度的调节比较麻烦。

发明内容

本发明要解决的技术问题是，克服以上现有技术的缺陷，提供一种结构简单、高度调节方便的升降工作台。

本发明的技术解决方案是，提供一种具有以下结构的升降工作台：它包括升降工作台本体，所述的升降工作台本体包括上支座、下支座以及连接在上支座和下支座之间的至少一组 X 型升降机构，每组 X 型升降机构包括中部铰接呈 X 型的第一支杆和第二支杆，所述下支座上设有固定在下支座上的第一铰接座以及相对于下支座可滑动的第二铰接座，所述上支座上设有固定在上支座上的第三铰接座以及相对于上支座可滑动的第四铰接座，所述第一支杆的下端与第一铰接座铰接，上端与第四铰接座铰接，所述第二支杆的下端与第二铰接座铰接，上端与第三铰接座铰接，所述升降工作台还包括弹性元件，所述弹性元件的第一端连接在所述第一支杆或第二支杆的两端点之间，弹性元件的第二端连接在下支座或相对于下支座可滑动的第二铰接座上，所述弹性元件用于抵消或部分抵消上支座承重。

采用以上结构后，本发明升降工作台与现有技术相比，具有以下优点：该升降工作台通过弹性元件来提供支撑力，用于抵消或部分抵消上支座承重，这样可以将工作台停留在任意高度，结构简单，高度调节方便，且成本较低；而且采用这种 X 型升降机构，在上支座升降的过程中，上支座的前后位置不会发生变化，因此比较实用。

所述弹性元件设置在下支座和第一支杆之间，所述弹性元件的第一端与下支座铰接，弹性元件的第二端与第一支杆铰接。

作为优选，所述弹性元件设置在第二铰接座和第二支杆之间，所述弹性元件的第一端

与第二铰接座铰接，弹性元件的第二端与第二支杆铰接。

作为优选，所述弹性元件为压缩气弹簧或机械压缩弹簧。

作为优选，所述弹性元件设置在下支座和第二支杆之间，所述弹性元件的第一端与下支座铰接，弹性元件的第二端与第二支杆铰接。

作为优选，所述弹性元件设置在第二铰接座和第一支杆之间，所述弹性元件的第一端与第二铰接座铰接，弹性元件的第二端与第一支杆铰接。

作为优选，所述弹性元件为拉伸气弹簧或拉簧。

作为改进，所述下支座上设有限制第二铰接座滑动的锁止机构。

作为优选，所述下支座上设有限制第二铰接座滑动的锁止机构，是指所述的下支座上连接有第一滑轨，所述的第二铰接座滑动配合在第一滑轨上，且第二铰接座上设有多个沿其长度方向分布的定位孔；所述第二铰接座外侧的下支座上设有一盒体，所述的盒体内设有一自由端能插入或脱离定位孔的活动销，且盒体内滑动配合一能带动活动销移动并使活动销的自由端脱离定位孔的滑动板。该锁止机构动作时，拉动滑动板在盒体内滑动，滑动板带动活动销移动使活动销的自由端脱离定位孔，此时第二铰接座沿第一滑轨滑动，使 X 型升降机构升降高度，当上支座升降到一定高度后，松开滑动板，活动销的自由端再次插入定位孔中以限制第二铰接座滑动。

作为改进，所述上支座上设有限制第四铰接座滑动的锁止机构。

锁止机构可以锁定 X 型升降机构，使 X 型升降机构的桌板高度固定，这样可以提高升降工作台的承重能力，锁止机构打开，用手克服弹性元件的弹力来调节上支座的高度，当上支座的高度调节完毕后，松开锁止机构，从而使第四铰接座限制滑动，使 X 型升降机构锁定，因此该升降工作台结构简单、高度调节方便。

作为优选，所述上支座上设有限制第四铰接座滑动的锁止机构，是指所述的上支座上连接有第二滑轨，所述的第四铰接座滑动配合在第二滑轨上，且第四铰接座上设有多个沿其长度方向分布的定位孔；所述第四铰接座外侧的上支座上设有一盒体，所述的盒体内设有一自由端能插入或脱离定位孔的活动销，且盒体内滑动配合一能带动活动销移动并使活动销的自由端脱离定位孔的滑动板。该锁止机构动作时，拉动滑动板在盒体内滑动，滑动板带动活动销移动使活动销的自由端脱离定位孔，此时第四铰接座沿第二滑轨滑动，使 X 型升降机构升降高度，当上支座相对下支座升降到一定高度后，松开滑动板，活动销的自由端再次插入定位孔中以限制第四铰接座滑动。

作为优选，所述的盒体内间隙配合一活动销座，所述的活动销连接在活动销座上，且活

动销上套设一复位弹簧，所述复位弹簧的一端与活动销座的内壁相抵，复位弹簧的另一端与盒体的内壁相抵，且复位弹簧呈压缩状态时，所述活动销的自由端脱离定位孔，所述活动销座的底部设有第一导向斜面；所述的滑动板上设有与第一导向斜面相配合的第二导向斜面，且滑动板向盒体外滑动时，所述的第二导向斜面挤压第一导向斜面使活动销座克服复位弹簧的弹力向外移动。拉动滑动板在盒体内滑动时，滑动板上的第二导向斜面挤压活动销座底部的第一导向斜面使活动销座克服复位弹簧的弹力向外移动，此时活动销座上的活动销的自由端脱离定位孔，第二铰接座沿第一滑轨滑动或第四铰接座沿第二滑轨滑动，使 X 型升降机构升降高度，当上支座升降到一定高度后，松开滑动板，活动销座在复位弹簧的弹力下带动活动销复位使活动销的自由端插入定位孔中以限制第二铰接座或第四铰接座滑动，同时，活动销座的第一导向斜面挤压滑动板的第二导向斜面使滑动板复位。

所述滑动板的外端连接一拉索，所述的拉索上设有一弹簧，所述弹簧的一端与滑动板的外端侧壁相抵，弹簧的另一端与盒体的内壁相抵；所述上支座上连接一扳手，所述的扳手与拉索的外端连接。

作为优选，所述至少一组 X 型升降机构为两组 X 型升降机构，且分别设置在上支座的两侧，所述两组 X 型升降机构之间用横板连接。采用这种结构可以使上支座两侧的 X 型升降机构同步运动，而且还可以加强升降工作台的机械强度及稳定性。

所述的上支座上连接一桌板。

所述的升降工作台本体还包括键盘托，所述的键盘托通过连接板与上支座连接。该键盘托可以供键盘放置。

附图说明

图 1 是本发明升降工作台实施例一的结构示意图。

图 2 是本发明升降工作台实施例一的底部结构示意图。

图 3 是本发明升降工作台实施例二的结构示意图。

图 4 是本发明升降工作台实施例三的结构示意图。

图 5 是本发明升降工作台实施例四的结构示意图。

图 6 是本发明升降工作台实施例五的结构示意图。

图 7 是本发明升降工作台实施例六的结构示意图。

图 8 是本发明升降工作台实施例七的结构示意图。

图 9 是本发明升降工作台实施例一锁止机构的结构示意图。

图 10 是本发明升降工作台实施例八的结构示意图。

图 11 是本发明升降工作台实施例八的底部结构示意图。

图 12 是本发明升降工作台实施例八锁止机构的结构示意图。

图 13 是本发明升降工作台实施例八在图 12 的 A 部放大结构示意图。

图 14 是本发明升降工作台锁止机构的组装结构示意图。

图 15 是本发明升降工作台锁止机构另一角度的组装结构示意图。

如图所示：

1、上支座，2、下支座，3、第一支杆，4、第二支杆，5、第一铰接座，6、第二铰接座，7、第三铰接座，8、第四铰接座，9、弹性元件，9.1、气弹簧，9.2、弹簧，10、桌板，11、横板，12、键盘托，13、扳手，14、第一滑轨，15、第二滑轨，16、定位孔，17、活动销，18、盒体，19、拉索复位弹簧，20、复位弹簧，21、活动销座，22、第一导向斜面，23、滑动板，24、第二导向斜面。

具体实施方式

下面结合附图和具体实施例对本发明作进一步详细说明。

如图 1～图 9 所示；

本发明升降工作台，它包括升降工作台本体，所述的升降工作台本体包括上支座 1、下支座 2 以及连接在上支座 1 和下支座 2 之间的至少一组 X 型升降机构，每组 X 型升降机构包括中部铰接呈 X 型的第一支杆 3 和第二支杆 4，所述下支座 2 上设有固定在下支座 2 上的第一铰接座 5 以及相对于下支座 2 可滑动的第二铰接座 6，所述上支座 1 上设有固定在上支座 1 上的第三铰接座 7 以及相对于上支座 1 可滑动的第四铰接座 8，所述第一支杆 3 的下端与第一铰接座 5 铰接，上端与第四铰接座 8 铰接，所述第二支杆 4 的下端与第二铰接座 6 铰接，上端与第三铰接座 7 铰接，所述升降工作台还包括弹性元件 9，所述弹性元件 9 的第一端连接在所述第一支杆 3 或第二支杆 4 的两端点之间，弹性元件 9 的第二端连接在下支座 2 或相对于下支座 2 可滑动的第二铰接座 6 上，所述弹性元件 9 用于抵消或部分抵消上支座承重。

在上支座 1 升降的过程中第二铰接座 6 和第四铰接座 8 分别相对于下支座 2 和上支座 1 可滑动，从而可以调节 X 型升降机构，使上支座 1 升降。

图 3 为实施例二、此实施例中，所述弹性元件 9 为气弹簧 9.1、气弹簧 9.1 的第一端连接在所述第一支杆 3 的两端点之间，气弹簧 9.1 的第二端连接在下支座 2 上。此实施例中所述气弹簧为压缩气弹簧，即该气弹簧提供向上的弹力。

图 4 为实施例三、此实施例中，所述弹性元件 9 为气弹簧 9.1、气弹簧 9.1 的第一端连接在所述第二支杆 4 的两端点之间，气弹簧 9.1 的第二端连接在第二铰接座 5 上。此实施例中所述气弹簧为压缩气弹簧，即该气弹簧提供向上的弹力。

图 5 为实施例四、此实施例中，所述弹性元件 9 为弹簧 9.2、弹簧 9.2 的第一端连接在所述第二支杆 4 的两端点之间，弹簧 9.2 的第二端连接在下支座 2 上，此实施例中，弹簧 9.2 为拉簧。即该弹簧提供收缩的拉力。

图 6 为实施例五、此实施例中，所述弹性元件 9 为弹簧 9.2、弹簧 9.2 的第一端连接在所述第一支杆 3 的两端点之间，弹簧 9.2 的第二端连接在上支座 1 上，此实施例中，弹簧 9.2 为拉簧。即该弹簧提供收缩的拉力。可以看出该实施例与实施例四实际上结构相同，只是跟实施例四为对称结构，即将本实施例中的上支座 1 看成实施例四中的下支座 2。将本实施例中的第一支杆 3 看成实施例四中的第二支杆 4，则该结构与实施例四相同。这种与实施例四对称的结构，也应在本申请保护范围之内。

图 7 为实施例六，此实施例为实施例之二的对称结构。

图 8 为实施例七，此实施例为实施例之三的对称结构。

本申请实施例包括但不限于上述实施例。

如图 9、图 14 和图 15 所示的实施例一，所述上支座 1 上设有限制第四铰接座 8 滑动的锁止机构。所述上支座 1 上设有限制第四铰接座 8 滑动的锁止机构，是指所述的上支座 1 上连接有第二滑轨 15，所述的第四铰接座 8 滑动配合在第二滑轨 15 上，且第四铰接座 8 上设有多个沿其长度方向分布的定位孔 16；所述第四铰接座 8 外侧的上支座 1 上设有一盒体 18，所述的盒体 18 内设有一自由端能插入或脱离定位孔 16 的活动销 17，且盒体 18 内滑动配合一能带动活动销 17 移动并使活动销 17 的自由端脱离定位孔 16 的滑动板 23。

所述的盒体 18 内间隙配合一活动销座 21，所述的活动销 17 连接在活动销座 21 上，且活动销 17 上套设一复位弹簧 20，所述复位弹簧 20 的一端与活动销座 21 的内壁相抵，复位弹簧 20 的另一端与盒体 18 的内壁相抵，且复位弹簧 20 呈压缩状态时，所述活动销 17 的自由端脱离第四铰接座 8 上的定位孔 16，所述活动销座 21 的底部设有第一导向斜面 22；所述的滑动板 23 上设有与第一导向斜面 22 相配合的第二导向斜面 24，且滑动板 23 向盒体 18 外滑动时，所述的第二导向斜面 24 挤压第一导向斜面 22 使活动销座 21 克服复位弹簧 20 的弹力向外移动。

所述滑动板 23 的外端连接一拉索，所述的拉索上设有一拉索复位弹簧 19，所述拉索复位弹簧 19 的一端与滑动板 23 的外端侧壁相抵，拉索复位弹簧 19 的另一端与盒体 18 的内壁

相抵；所述上支座 1 上连接一扳手 13，所述的扳手 13 与拉索的外端连接。

所述至少一组 X 型升降机构为两组 X 型升降机构，且分别设置在上支座 1 的两侧，所述两组 X 型升降机构之间用横板 11 连接。

所述的上支座上连接一桌板 10。

所述的升降工作台本体还包括键盘托，所述的键盘托 12 通过连接板与上支座 1 连接。

如图 10～图 15 所示，本发明的实施例八，其技术方案和实施例一相同，但下支座 2 上设有限制第二铰接座 6 滑动的锁止机构。该实施例中的锁止机构与实施例一相比是设置在下支座上。

所述下支座 2 上设有限制第二铰接座 6 滑动的锁止机构，是指所述的下支座 2 上连接有第一滑轨 14，所述的第二铰接座 6 滑动配合在第一滑轨 14 上，且第二铰接座 6 上设有多个沿其长度方向分布的定位孔 16；所述第二铰接座 6 外侧的下支座 2 上设有一盒体 18，所述的盒体 18 内设有一自由端能插入或脱离定位孔 16 的活动销 17，且盒体 18 内滑动配合一能带动活动销 17 移动并使活动销 17 的自由端脱离定位孔 16 的滑动板 23。

所述的盒体 18 内间隙配合一活动销座 21，所述的活动销 17 连接在活动销座 21 上，且活动销 17 上套设一复位弹簧 20，所述复位弹簧 20 的一端与活动销座 21 的内壁相抵，复位弹簧 20 的另一端与盒体 18 的内壁相抵，且复位弹簧 20 呈压缩状态时，所述活动销 17 的自由端脱离第二铰接座 6 的定位孔 16，所述活动销座 21 的底部设有第一导向斜面 22；所述的滑动板 23 上设有与第一导向斜面 22 相配合的第二导向斜面 24，且滑动板 23 向盒体 18 外滑动时，所述的第二导向斜面 24 挤压第一导向斜面 22 使活动销座 21 克服复位弹簧的弹力向外移动。

权 利 要 求 书

1、一种升降工作台，它包括升降工作台本体，所述的升降工作台本体包括上支座、下支座以及连接在上支座和下支座之间的至少一组 X 型升降机构，其特征在于：每组 X 型升降机构包括中部铰接呈 X 型的第一支杆和第二支杆，所述下支座上设有固定在下支座上的第一铰接座以及相对于下支座可滑动的第二铰接座，所述上支座上设有固定在上支座上的第三铰接座以及相对于上支座可滑动的第四铰接座，所述第一支杆的下端与第一铰接座铰接，上端与第四铰接座铰接，所述第二支杆的下端与第二铰接座铰接，上端与第三铰接座铰接，所述升降工作台还包括弹性元件，所述弹性元件的第一端连接在所述第一支杆或第二支杆的两端点之间，弹性元件的第二端连接在下支座或相对于下支座可滑动的第二铰接座上，所述弹性元件用于抵消或部分抵消上支座承重。

2、根据权利要求 1 所述的升降工作台，其特征在于：所述弹性元件设置在下支座和第一支杆之间，所述弹性元件的第一端与下支座铰接，弹性元件的第二端与第一支杆铰接。

3、根据权利要求 1 所述的升降工作台，其特征在于：所述弹性元件设置在第二铰接座和第二支杆之间，所述弹性元件的第一端与第二铰接座铰接，弹性元件的第二端与第二支杆铰接。

4、根据权利要求 2 或 3 所述的升降工作台，其特征在于：所述弹性元件为压缩气弹簧或机械压缩弹簧。

5、根据权利要求 1 所述的升降工作台，其特征在于：所述弹性元件设置在下支座和第二支杆之间，所述弹性元件的第一端与下支座铰接，弹性元件的第二端与第二支杆铰接。

6、根据权利要求 1 所述的升降工作台，其特征在于：所述弹性元件设置在第二铰接座和第一支杆之间，所述弹性元件的第一端与第二铰接座铰接，弹性元件的第二端与第一支杆铰接。

7、根据权利要求 5 或 6 所述的升降工作台，其特征在于：所述弹性元件为拉伸气弹簧或拉簧。

8、根据权利要求 1 所述的升降工作台，其特征在于：所述下支座上设有限制第二铰接座滑动的锁止机构。

9、根据权利要求 8 所述的升降工作台，其特征在于：所述下支座上设有限制第二铰接座滑动的锁止机构，是指所述的下支座上连接有第一滑轨，所述的第二铰接座滑动配合在第一滑轨上，且第二铰接座上设有多个沿其长度方向分布的定位孔；所述第二铰接座外侧的下支座上设有一盒体，所述的盒体内设有一自由端能插入或脱离定位孔的活动销，且盒体内

滑动配合一能带动活动销移动并使活动销的自由端脱离定位孔的滑动板。

10、根据权利要求 1 所述的升降工作台，其特征在于：所述上支座上设有限制第四铰接座滑动的锁止机构。

11、根据权利要求 10 所述的升降工作台，其特征在于：所述上支座上设有限制第四铰接座滑动的锁止机构，是指所述的上支座上连接有第二滑轨，所述的第四铰接座滑动配合在第二滑轨上，且第四铰接座上设有多个沿其长度方向分布的定位孔；所述第四铰接座外侧的上支座上设有一盒体，所述的盒体内设有一自由端能插入或脱离定位孔的活动销，且盒体内滑动配合一能带动活动销移动并使活动销的自由端脱离定位孔的滑动板。

12、根据权利要求 9 或 11 所述的升降工作台，其特征在于：所述的盒体内间隙配合一活动销座，所述的活动销连接在活动销座上，且活动销上套设一复位弹簧，所述复位弹簧的一端与活动销座的内壁相抵，复位弹簧的另一端与盒体的内壁相抵，且复位弹簧呈压缩状态时，所述活动销的自由端脱离定位孔，所述活动销座的底部设有第一导向斜面；所述的滑动板上设有与第一导向斜面相配合的第二导向斜面，且滑动板向盒体外滑动时，所述的第二导向斜面挤压第一导向斜面使活动销座克服复位弹簧的弹力向外移动。

13、根据权利要求 12 所述的升降工作台，其特征在于：所述滑动板的外端连接一拉索，所述的拉索上设有一拉索复位弹簧，所述拉索复位弹簧的一端与滑动板的外端侧壁相抵，拉索复位弹簧的另一端与盒体的内壁相抵；所述上支座上连接一扳手，所述的扳手与拉索的外端连接。

14、根据权利要求 1 所述的升降工作台，其特征在于：所述至少一组 X 型升降机构为两组 X 型升降机构，且分别设置在上支座的两侧，所述两组 X 型升降机构之间用横板连接。

15、根据权利要求 1 所述的升降工作台，其特征在于：所述的上支座上连接一桌板。

16、根据权利要求 15 所述的升降工作台，其特征在于：所述的升降工作台本体还包括键盘托，所述的键盘托通过连接板与上支座连接。

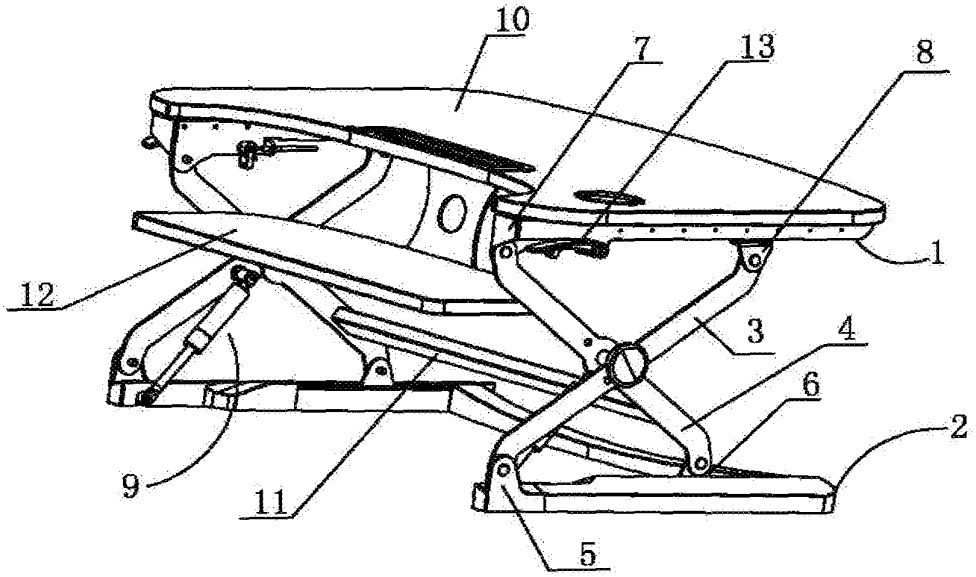


图 1

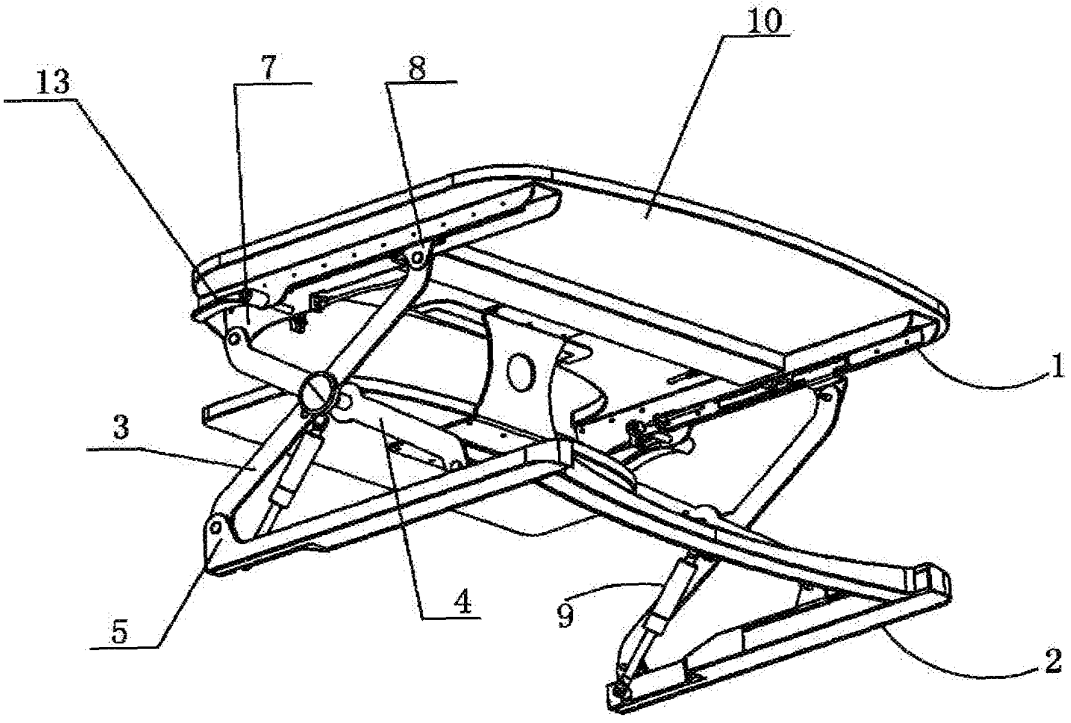


图 2

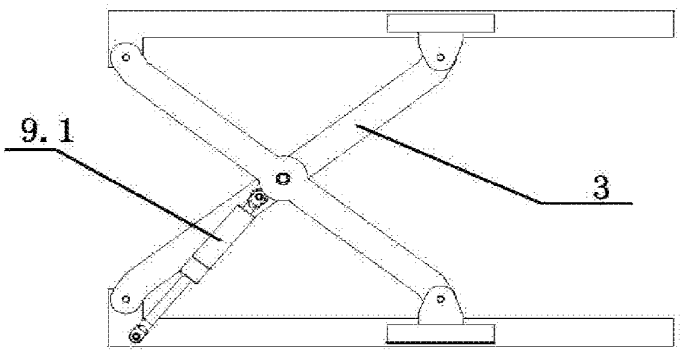


图 3

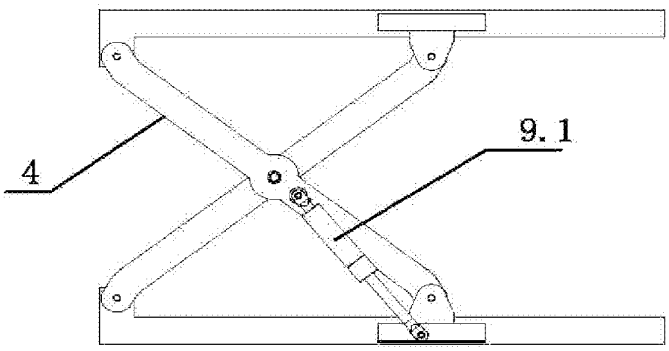


图 4

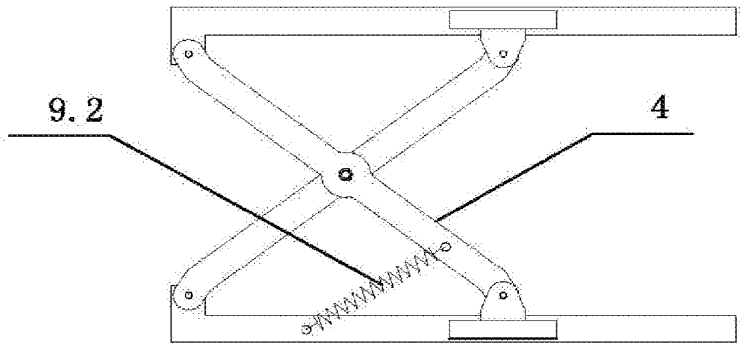


图 5

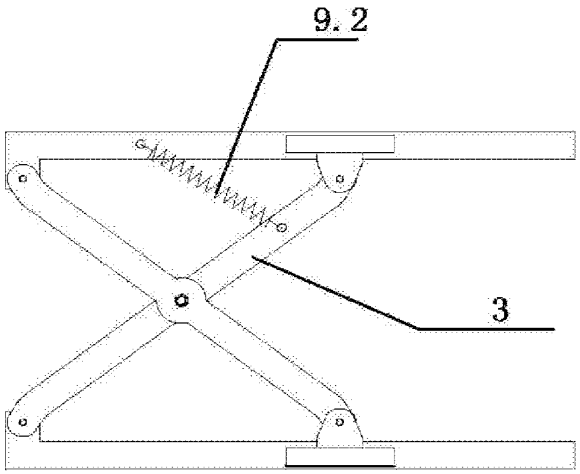


图 6

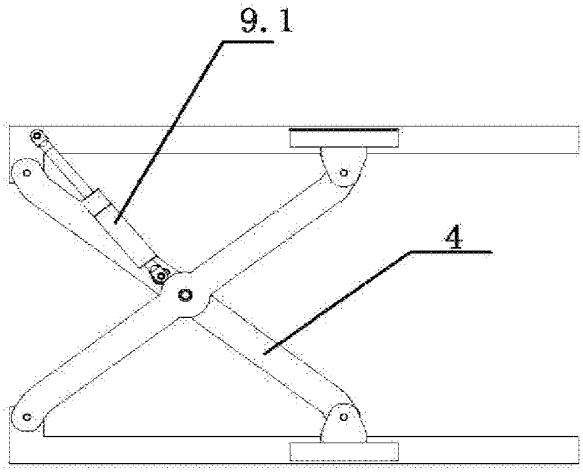


图 7

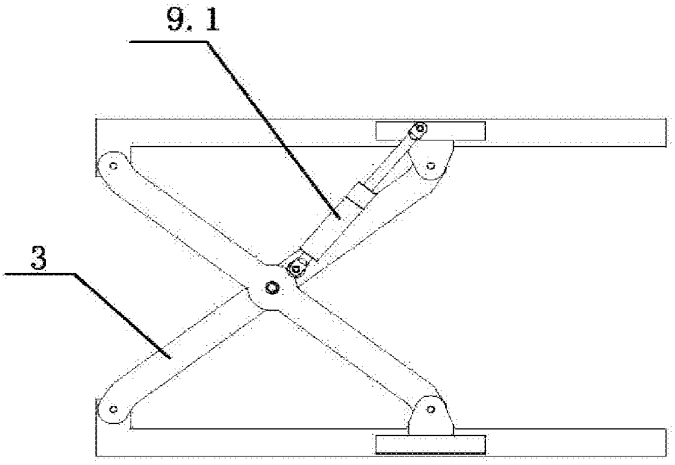


图 8

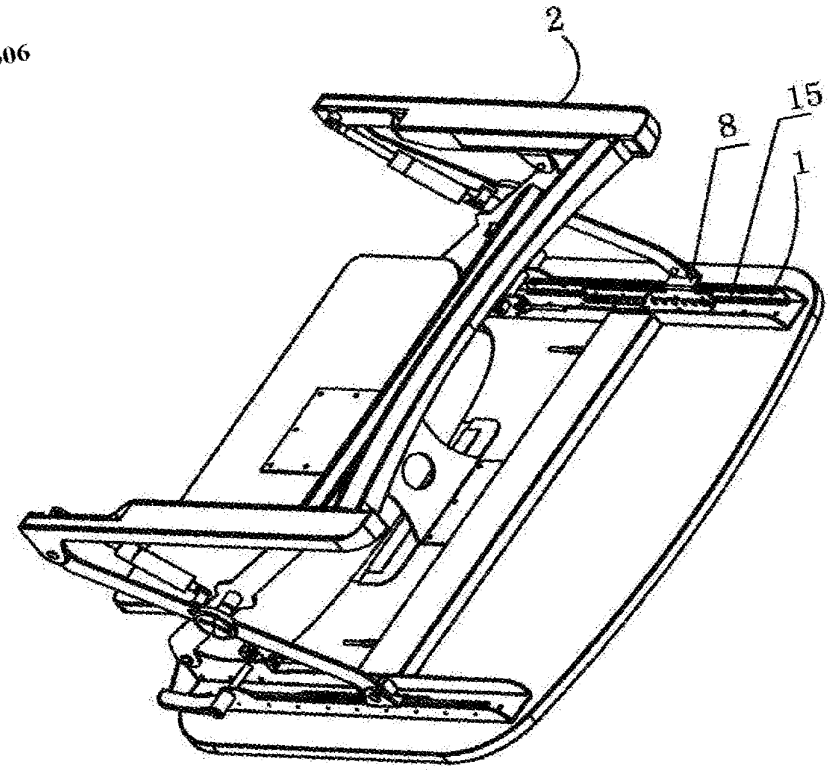


图 9

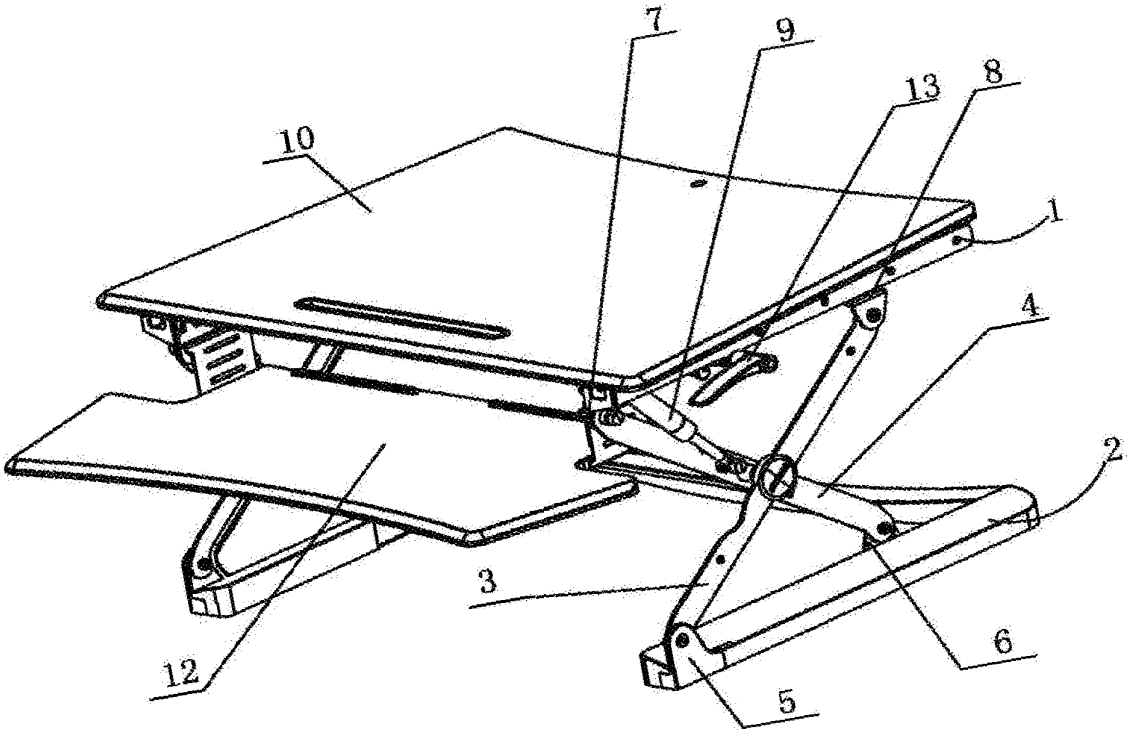


图 10

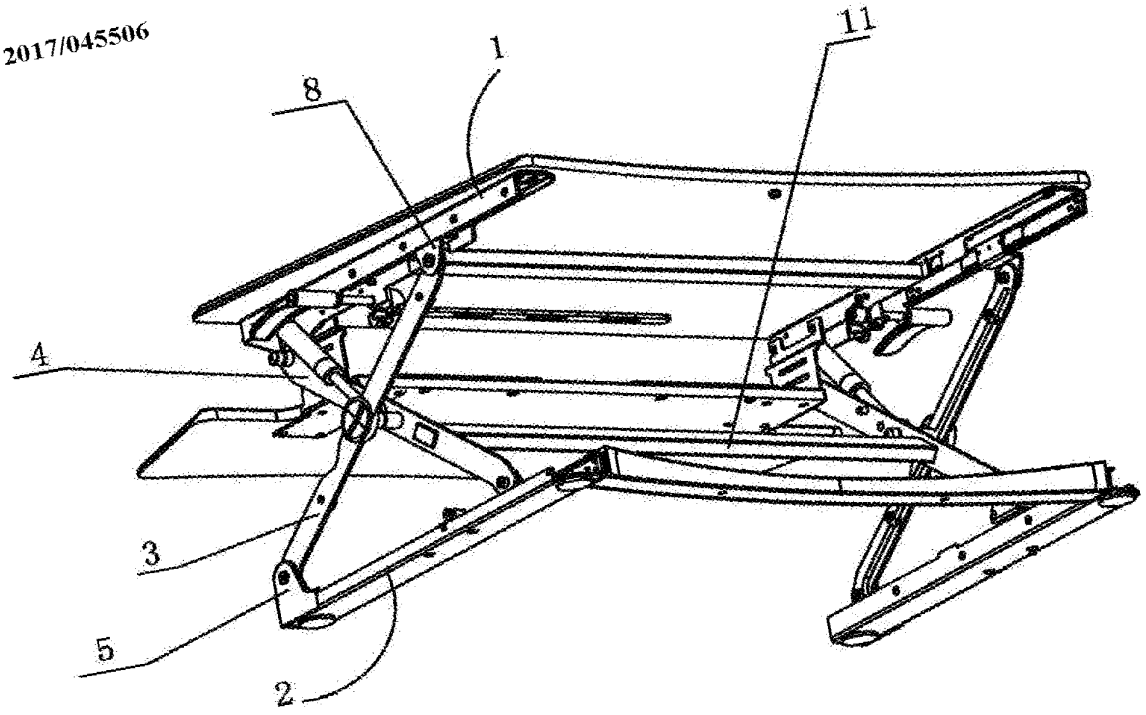


图 11

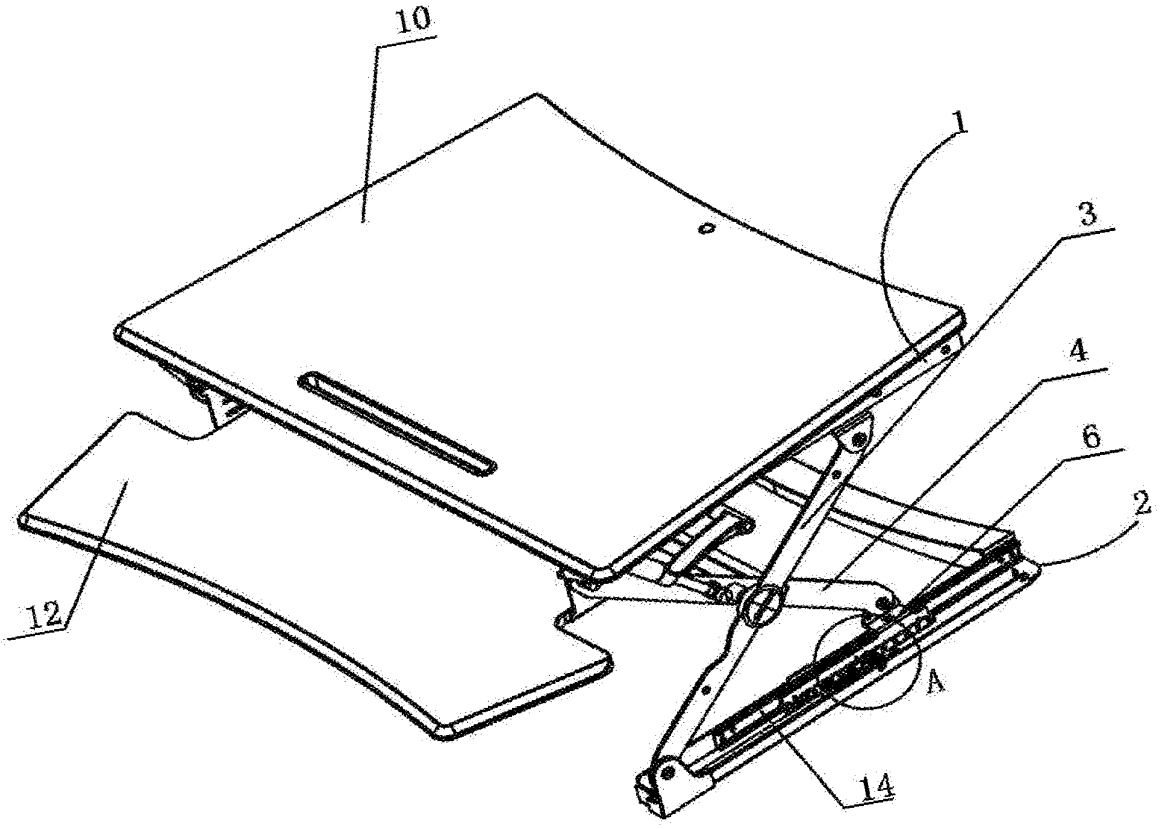


图 12

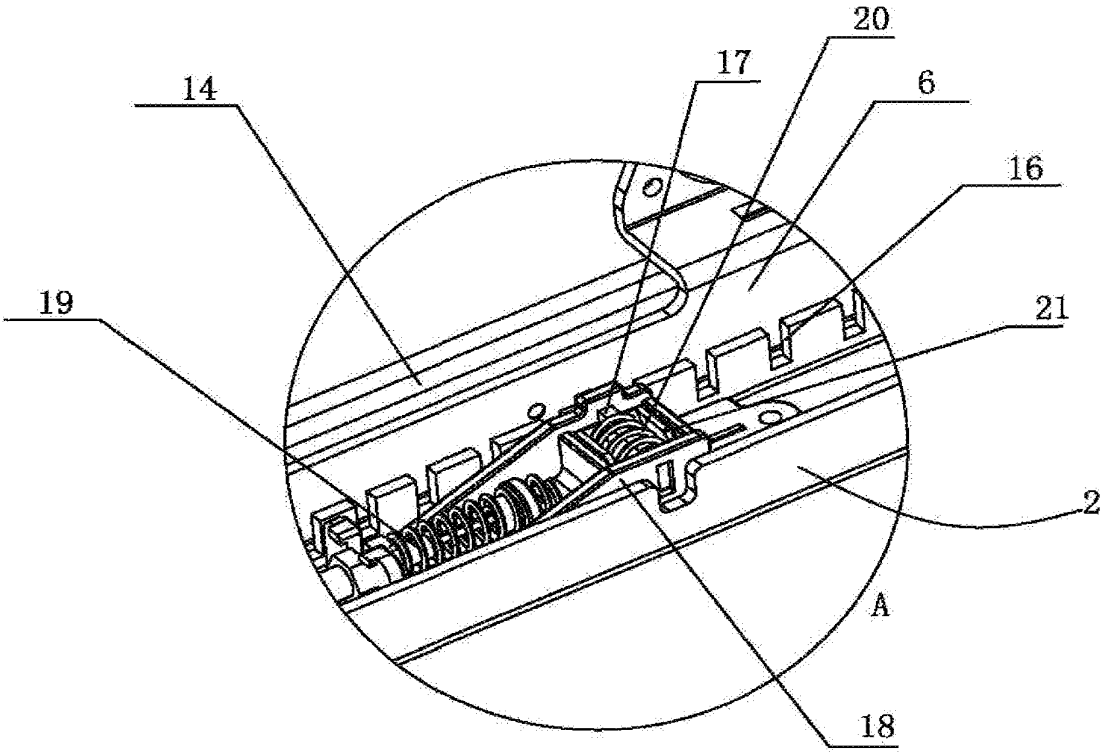


图 13

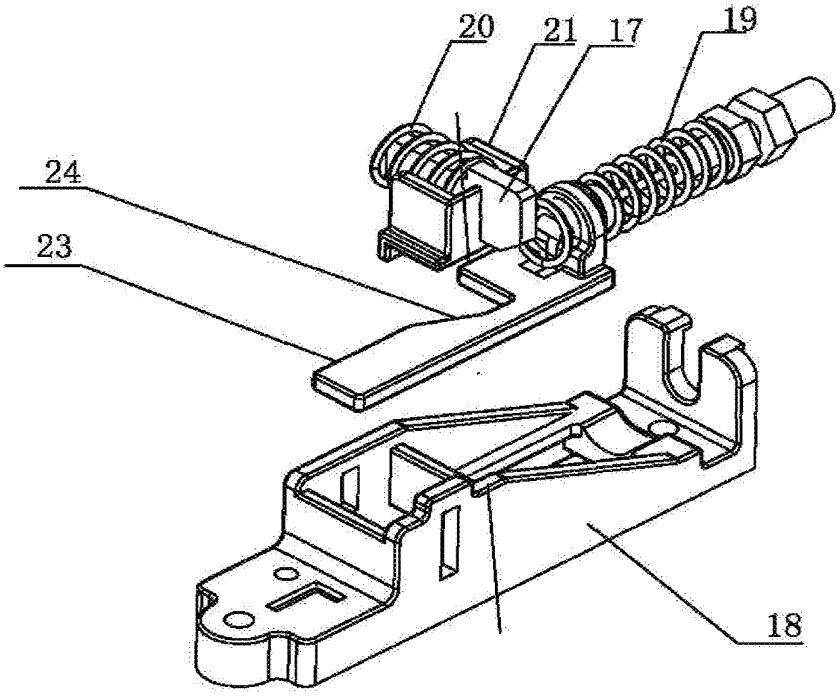


图 14

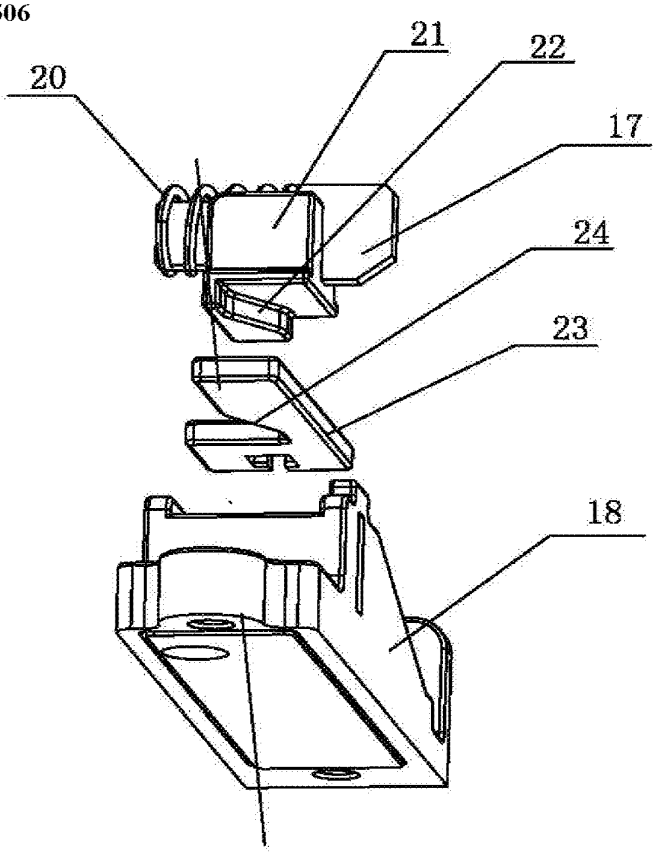


图 15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2016/095619

A. CLASSIFICATION OF SUBJECT MATTER

A47B 9/16 (2006.01) i; A47B 3/02 (2006.01) i; A47B 21/02 (2006.01) i

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)

A47B 9; A47B 3; A47B 21; A47B 13; B66F 7

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)

CNPAT, China Journal Full-text Database: lifting, fold, worktable, table, shear mode, X, height, adjust, adjustable, lock, position-limiting, location, spin, spring, inclined plan.
EPODOC, WPI: lifting, elevat+, height, adjustable, fold+, scissor?, lock+, spacing, pin?, spring?, cylinder

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 105124920 A (NINGBO LOCTEK VISUAL TECHNOLOGY CORP.), 09 December 2015 (09.12.2015), claims 1-10, and figures 1-10	1-16
PX	CN 204949970 U (NINGBO LOCTEK VISUAL TECHNOLOGY CORP.), 13 January 2016 (13.01.2016), claims 1-10, and figures 1-10	1-16
E	CN 105901942 A (LOCTEK ERGONOMIC TECHNOLOGY CORP.), 31 August 2016 (31.08.2016), description, paragraphs 22-29, and figures 1-6	1, 2, 4, 8, 9, 12-16
X	CN 204541230 U (NINGBO ZHENHAI TOPIDEA INDUSTRY PRODUCT DESIGN CO., LTD.), 12 August 2015 (12.08.2015), description, paragraphs 10 and 16-21, and figures 1-3	1-8, 10, 14-16
Y	CN 204541230 U (NINGBO ZHENHAI TOPIDEA INDUSTRY PRODUCT DESIGN CO., LTD.), 12 August 2015 (12.08.2015), description, paragraphs 10 and 16-21, and figures 1-3	9, 11-13
Y	KR 20080005702 A (PARK, J.M.), 15 January 2008 (15.01.2008), description, paragraphs 23-54, and figures 1-7	9, 11-13
A	CN 201205081 Y (GUANGDONG FOREIGN TRADE IMP. & EXP. CORPORATION), 11 March 2009 (11.03.2009), the whole document	1-16

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

* Special categories of cited documents:

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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)

"O" document referring to an oral disclosure, use, exhibition or other means

"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 October 2016 (26.10.2016)	**04 November 2016 (04.11.2016)**
Name and mailing address of the ISA/CN: State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No.: (86-10) 62019451	Authorized officer **FAN, Xiaoling** Telephone No.: (86-10) **61648150**

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2016/095619

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 20317442 U1 (MERKT KONRAD G.M.B.H.), 22 April 2004 (22.04.2004), the whole document	1-16
A	DE 4032674 A1 (PRINZESS MOEBEL GUSTAV WERITZ), 16 April 1992 (16.04.1992), the whole document	1-16

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2016/095619

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 105124920 A	09 December 2015	None	
CN 204949970 U	13 January 2016	None	
CN 105901942 A	31 August 2016	None	
CN 204541230 U	12 August 2015	None	
KR 20080005702 A	15 January 2008	None	
CN 201205081 Y	11 March 2009	None	
DE 20317442 U1	22 April 2004	None	
DE 4032674 A1	16 April 1992	None	

Form PCT/ISA/210 (patent family annex) (July 2009)

国际检索报告

国际申请号 PCT/CN2016/095619

A. 主题的分类

A47B 9/16(2006.01)i；A47B 3/02(2006.01)i；A47B 21/02(2006.01)i

按照国际专利分类(IPC)或者同时按照国家分类和IPC两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

A47B9; A47B3; A47B21; A47B13; B66F7

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用））

CNPAT，中国期刊网全文数据库：升降，折叠，工作台，桌，剪式，X，高度，调节，可调，锁，限位，定位，销，弹簧，斜面。 EPODOC, WPI: lifting, elevat+, height, adjustable, fold+, scissor?, lock+, spacing, pin?, spring?, cylinder.

C. 相关文件

类 型*	引用文件，必要时，指明相关段落	相关的权利要求
PX	CN 105124920 A (宁波乐歌视讯科技股份有限公司) 2015年 12月 9日 (2015-12-09) 权利要求1-10，图1-10	1-16
PX	CN 204949970 U (宁波乐歌视讯科技股份有限公司) 2016年 1月 13日 (2016-01-13) 权利要求1-10，图1-10	1-16
E	CN 105901942 A (乐歌人体工学科技股份有限公司) 2016年 8月 31日 (2016-08-31) 说明书22-29段，图1-6	1，2，4， 8，9，12-16
X	CN 204541230 U (宁波市镇海拓迪工业产品设计有限公司) 2015年 8月 12日 (2015-08-12) 说明书10，16-21段，图1-3	1-8，10，14-16
Y	CN 204541230 U (宁波市镇海拓迪工业产品设计有限公司) 2015年 8月 12日 (2015-08-12) 说明书10，16-21段，图1-3	9，11-13
Y	KR 20080005702 A (PARK, JIN MYUNG) 2008年 1月 15日 (2008-01-15) 说明书23-54段，图1-7	9，11-13
A	CN 201205081 Y (广东省外贸开发公司) 2009年 3月 11日 (2009-03-11) 全文	1-16

☑ 其余文件在C栏的续页中列出。 ☑ 见同族专利附件。

* 引用文件的具体类型：

"A" 认为不特别相关的表示了现有技术一般状态的文件

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"L" 可能对优先权要求构成怀疑的文件，或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件（如具体说明的）

"O" 涉及口头公开、使用、展览或其他方式公开的文件

"P" 公布日先于国际申请日但迟于所要求的优先权日的文件

"T" 在申请日或优先权日之后公布，与申请不相抵触，但为了理解发明之理论或原理的在后文件

"X" 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

"Y" 特别相关的文件，当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时，要求保护的发明不具有创造性

"&" 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
2016年 10月 26日	2016年 11月 4日
ISA/CN的名称和邮寄地址 中华人民共和国国家知识产权局(ISA/CN) 中国北京市海淀区蓟门桥西土城路6号 100088 传真号 (86-10)62019451	**受权官员** 范肖凌 电话号码 (86-10)61648150

表 PCT/ISA/210 (第2页) (2009年7月)

C. 相关文件

类型*	引用文件，必要时，指明相关段落	相关的权利要求
A	DE 20317442 U1 (MERKT KONRAD G.M.B.H.) 2004年 4月 22日 (2004-04-22) 全文	1-16
A	DE 4032674 A1 (PRINZESS MOEBEL GUSTAV WERITZ) 1992年 4月 16日 (1992-04-16) 全文	1-16

国际检索报告
关于同族专利的信息

国际申请号
PCT/CN2016/095619

检索报告引用的专利文件			公布日 (年/月/日)	同族专利	公布日 (年/月/日)
CN	105124920	A	2015年 12月 9日	无	
CN	204949970	U	2016年 1月 13日	无	
CN	105901942	A	2016年 8月 31日	无	
CN	204541230	U	2015年 8月 12日	无	
KR	20080005702	A	2008年 1月 15日	无	
CN	201205081	Y	2009年 3月 11日	无	
DE	20317442	U1	2004年 4月 22日	无	
DE	4032674	A1	1992年 4月 16日	无	

表 PCT/ISA/210 (同族专利附件) (2009年7月)

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2022-11-10
First Named Inventor	Nathan Mark Poniatowski
Art Unit	
Examiner Name	
Attorney Docket Number	1001-001US16

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	10018298	B2	2018-07-10	Goldish et al.	
	2	10023355	B2	2018-07-17	Taylor et al.	
	3	10114352	B2	2018-10-30	Matlin	
	4	10123613	B2	2018-11-13	HALL et al.	
	5	10159336	B2	2018-12-25	Liao et al.	
	6	10244861	B1	2019-04-02	Poniatowski	
	7	10258148	B1	2019-04-16	Donner et al.	
	8	10258149	B2	2019-04-16	ZHONG	

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	9	10264877	B2	2019-04-23	Hu et al.	
	10	10306977	B2	2019-06-04	WONG	
	11	10413055	B2	2019-09-17	Laudadio et al.	
	12	10499730	B2	2019-12-10	Kim et al.	
	13	10517390	B2	2019-12-31	Xiang et al.	
	14	10524565	B2	2020-01-07	Ergun et al.	
	15	10542817	B2	2020-01-28	Swartz et al.	
	16	10544019	B2	2020-01-28	Kochie et al.	
	17	10568416	B1	2020-02-25	Poniatowski	
	18	10575630	B1	2020-03-03	Poniatowski	
	19	10869549	B2	2020-12-22	Xiang et al.	

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	20	10893748	B1	2021-01-19	Poniatowski	
	21	11083282	B1	2021-08-10	Liu	
	22	11134773	B1	2021-10-05	Poniatowski	
	23	11134774	B1	2021-10-05	Poniatowski	
	24	11140977	B1	2021-10-12	Poniatowski	
	25	11147366	B1	2021-10-19	Poniatowski	
	26	11160367	B1	2021-11-02	Poniatowski	
	27	11388989	B1	2022-07-19	Poniatowski	
	28	11388991	B1	2022-07-19	Poniatowski	
	29	11395544	B1	2022-07-26	Poniatowski	
	30	11464325	B1	2022-10-11	Poniatowski	

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	31	1217772	A	1917-02-27	Kade	
	32	1318564	A	1919-10-14	Jenkins	
	33	200057	A	1878-02-05	Hart	
	34	2692807	A	1954-10-26	Cordola	
	35	2843418	A	1958-07-15	Gray	
	36	2937003	A	1960-05-17	Croll	
	37	3092918	A	1963-06-11	Haeussermann et al.	
	38	3295800	A	1967-01-03	Karl-Erik et al.	
	39	3444830	A	1969-05-20	Doetsch	
	40	3823915	A	1974-07-16	Koehler	
	41	3826457	A	1974-07-30	Huot de Longchamp	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Attorney Docket Number	1001-001US16

	42	4072288	A	1978-02-07	Wirges et al.	
	43	4221280	A	1980-09-09	Richards	
	44	4433759	A	1984-02-28	Ichinose	
	45	4448386	A	1984-05-15	Moorhouse et al.	
	46	4449262	A	1984-05-22	Jahsman et al.	
	47	4549720	A	1985-10-29	Bergenwall	
	48	4558648	A	1985-12-17	Franklin et al.	
	49	4577821	A	1986-03-25	Edmo et al.	
	50	4625657	A	1986-12-02	Little et al.	
	51	4640488	A	1987-02-03	Sakamoto	
	52	4659052	A	1987-04-21	Nagata	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Art Unit	
	Examiner Name	
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	53	4702454	A	1987-10-27	Izumida	
	54	4709972	A	1987-12-01	LaBudde et al.	
	55	4717112	A	1988-01-05	Pirkle	
	56	4741512	A	1988-05-03	Elkuch et al.	
	57	4753419	A	1988-06-28	Johansson	
	58	4826123	A	1989-05-02	Hannah et al.	
	59	4843978	A	1989-07-04	Schmidt et al.	
	60	4941641	A	1990-07-17	Granzow et al.	
	61	4967672	A	1990-11-06	Leather	
	62	4995130	A	1991-02-26	Hahn et al.	
	63	5037163	A	1991-08-06	Hatcher	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	64	5048784	A	1991-09-17	Schwartz et al.	
	65	5211367	A	1993-05-18	Musculus	
	66	5251864	A	1993-10-12	Itou	
	67	5257767	A	1993-11-02	McConnell	
	68	5294087	A	1994-03-15	Drabczyk et al.	
	69	5400720	A	1995-03-28	Stevens	
	70	5588377	A	1996-12-31	Fahmian	
	71	5626323	A	1997-05-06	Lechman et al.	
	72	5722513	A	1998-03-03	Rowan et al.	
	73	5765797	A	1998-06-16	Greene et al.	
	74	5829948	A	1998-11-03	Becklund	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	75	5836562	A	1998-11-17	Danzyger et al.	
	76	5926876	A	1999-07-27	Haigh et al.	
	77	5957426	A	1999-09-28	Brodersen	
	78	606845	A	1898-07-05	Simmons	
	79	6076785	A	2000-06-20	Oddsen Jr.	
	80	6098961	A	2000-08-08	Gionet	
	81	6148739	A	2000-11-21	Martin	
	82	6176456	B1	2001-01-23	Wisniewski	
	83	6179261	B1	2001-01-30	Lin	
	84	6269753	B1	2001-08-07	Roddan	
	85	6273382	B1	2001-08-14	Pemberton	

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	86	6488248	B1	2002-12-03	Watt et al.	
	87	6516478	B2	2003-02-11	Cook et al.	
	88	6533229	B1	2003-03-18	Hung	
	89	6533479	B2	2003-03-18	Kochanski	
	90	6672430	B2	2004-01-06	Boucher et al.	
	91	6701853	B1	2004-03-09	Hwang	
	92	6702372	B2	2004-03-09	Tholkes et al.	
	93	6722618	B1	2004-04-20	Wu	
	94	6742768	B2	2004-06-01	Alba	
	95	6792876	B2	2004-09-21	Lin	
	96	6857493	B2	2005-02-22	Shupp et al.	

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	97	6938866	B2	2005-09-06	Kirchhoff	
	98	7048236	B2	2006-05-23	Benden et al.	
	99	7188813	B2	2007-03-13	Kollar	
	100	7204193	B2	2007-04-17	Scherrer et al.	
	101	7207629	B2	2007-04-24	Goetz et al.	
	102	7246784	B1	2007-07-24	Lopez	
	103	7575205	B2	2009-08-18	Kirchhoff	
	104	7677518	B2	2010-03-16	Chouinard et al.	
	105	7841570	B2	2010-11-30	Mileos et al.	
	106	7845665	B2	2010-12-07	Borisoff	
	107	7946551	B1	2011-05-24	Cvek	

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	108	7950338	B2	2011-05-31	Smed	
	109	8015638	B2	2011-09-13	Shimada et al.	
	110	8132518	B2	2012-03-13	Kim et al.	
	111	8303062	B2	2012-11-06	Zanelli	
	112	835247	A	1906-11-06	Morgan	
	113	8469152	B2	2013-06-25	Olsen et al.	
	114	8490933	B2	2013-07-23	Papic et al.	
	115	8544391	B2	2013-10-01	Knox et al.	
	116	8671853	B2	2014-03-18	Flaherty	
	117	8684339	B2	2014-04-01	Deml et al.	
	118	8931750	B2	2015-01-13	Kohl et al.	

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	119	8950343	B2	2015-02-10	Huang	
	120	9049923	B1	2015-06-09	Delagey et al.	
	121	9055810	B2	2015-06-16	Flaherty	
	122	9113703	B2	2015-08-25	Flaherty	
	123	9232855	B2	2016-01-12	Ergun et al.	
	124	9326598	B1	2016-05-03	West et al.	
	125	9480332	B2	2016-11-01	Han	
	126	9504316	B1	2016-11-29	Streicher et al.	
	127	9554644	B2	2017-01-31	Flaherty et al.	
	128	9668572	B2	2017-06-06	Ergun et al.	
	129	9681746	B1	2017-06-20	Chen	

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	130	9809136	B2	2017-11-07	Haller et al.	
	131	9815672	B2	2017-11-14	Baudermann	
	132	9854904	B2	2018-01-02	Getz	
	133	9955780	B2	2018-05-01	Koch	
	134	9981571	B2	2018-05-29	Garing	
	135	9993068	B2	2018-06-12	LIN et al.	
	136	D302893	S	1989-08-15	Wakefield	
	137	D830739	S1	2018-10-16	Min	
	138	D845037	S1	2019-04-09	Min	
	139	D854775	S1	2019-07-23	Chang et al.	
	140	D870490	S1	2019-12-24	Hu	

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	141	D901959	S1	2020-11-17	Chang	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030042380	A1	2003-03-06	Hagglund et al.	
	2	20030213415	A1	2003-11-20	Ross et al.	
	3	20040035332	A1	2004-02-26	Lin	
	4	20040040480	A1	2004-03-04	Hwang	
	5	20050029849	A1	2005-02-10	Goetz et al.	
	6	20050120922	A1	2005-06-09	Brooks	
	7	20070001077	A1	2007-01-04	Kirchhoff	
	8	20070080564	A1	2007-04-12	Chen	

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	9	20070266912	A1	2007-11-22	Swain	
	10	20080000393	A1	2008-01-03	Wilson et al.	
	11	20090090832	A1	2009-04-09	Mileos et al.	
	12	20090145336	A1	2009-06-11	Kenny	
	13	20090146389	A1	2009-06-11	Borisoff	
	14	20090200437	A1	2009-08-13	Smed	
	15	20100242174	A1	2010-09-30	Paul Morrison et al.	
	16	20110001033	A1	2011-01-06	Kohl et al.	
	17	20110024958	A1	2011-02-03	Deml et al.	
	18	20120097822	A1	2012-04-26	Hammarskiöld	
	19	20120188302	A1	2012-07-26	Zanelli	

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	20	20130145972	A1	2013-06-13	Knox et al.	
	21	20130193392	A1	2013-08-01	McGinn	
	22	20130199420	A1	2013-08-08	Hjelm	
	23	20140144352	A1	2014-05-29	Roberts	
	24	20140158026	A1	2014-06-12	Flaherty	
	25	20150028787	A1	2015-01-29	Sekine et al.	
	26	20150216296	A1	2015-08-06	Mitchell	
	27	20150232005	A1	2015-08-20	Haller et al.	
	28	20150274038	A1	2015-10-01	Garing	
	29	20150289641	A1	2015-10-15	Ergun et al.	
	30	20150368082	A1	2015-12-24	Davis et al.	

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	31	20150375896	A1	2015-12-31	Taylor et al.	
	32	20160051042	A1	2016-02-25	Koch	
	33	20160060084	A1	2016-03-03	Baudermann	
	34	20160106205	A1	2016-04-21	Hall et al.	
	35	20160170402	A1	2016-06-16	Lindström	
	36	20160249737	A1	2016-09-01	Han	
	37	20160258573	A1	2016-09-08	Goldish et al.	
	38	20160260019	A1	2016-09-08	Ruiz et al.	
	39	20160309889	A1	2016-10-27	LIN et al.	
	40	20160338486	A1	2016-11-24	Martin	
	41	20160353880	A1	2016-12-08	Sigal et al.	

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	42	20170071332	A1	2017-03-16	Herring et al.	
	43	20170174486	A1	2017-06-22	Kochie et al.	
	44	20170196351	A1	2017-07-13	Failing	
	45	20170354245	A1	2017-12-14	Martin et al.	
	46	20170360192	A1	2017-12-21	Hu	
	47	20180008037	A1	2018-01-11	Laudadio	
	48	20180055214	A1	2018-03-01	Kim et al.	
	49	20180103752	A1	2018-04-19	ZHONG	
	50	20180125227	A1	2018-05-10	Xiang et al.	
	51	20180177289	A1	2018-06-28	Chen	
	52	20180213929	A1	2018-08-02	Ergun et al.	

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	Application Number	
	Filing Date	2022-11-10
	First Named Inventor	Nathan Mark Poniatowski
	Art Unit	
	Examiner Name	
	Attorney Docket Number	1001-001US16

	53	20180255919	A1	2018-09-13	Swartz et al.	
	54	20180279770	A1	2018-10-04	Crowe et al.	
	55	20180360208	A1	2018-12-20	Liao et al.	
	56	20190110588	A1	2019-04-18	WONG	
	57	20190183239	A1	2019-06-20	SEMMELRATH et al.	
	58	20190269237	A1	2019-09-05	ZHU	
	59	20200029685	A1	2020-01-30	DU et al.	
	60	20200107633	A1	2020-04-09	Kang	

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	1	102599728	CN	A	2012-07-25	Xu		X

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	Filing Date	2022-11-10
	First Named Inventor	Nathan Mark Poniatowski
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	2	105124920	CN	A	2015-12-09	Xiang et al.		☒
	3	107048694	CN	A	2017-08-18	Dai et al.		☒
	4	107048695	CN	A	2017-08-18	Tang		☒
	5	107212587	CN	A	2017-09-29	Wang		☒
	6	107744256	CN	A	2018-03-02	Han et al.		☒
	7	107756350	CN	A	2018-03-06	Zhao et al.		☒
	8	107912868	CN	A	2018-04-17	Cui		☒
	9	109008216	CN	A	2018-12-18	Kang		☒
	10	110840072	CN	A	2020-02-28	JIAXING BAOGONG INTELLIGENT TECH CO LTD		☒
	11	1142343	CN	A	1997-02-12	Herbert et al.		☒
	12	201657970	CN	U	2010-12-01	黄议绪		☒

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	13	202681005	CN	U	2013-01-23	钟兴华		☒
	14	202681013	CN	U	2013-01-23	Xinghua		☒
	15	202874336	CN	U	2013-04-17	Xinghua		☒
	16	203333240	CN	U	2013-12-11	魏录顺		☒
	17	203934825	CN	U	2014-11-12	张俏卿		☒
	18	207186305	CN	U	2018-04-06	任家中		☒
	19	208403596	CN	U	2019-01-22	丘国兴		☒
	20	2637251	CN	Y	2004-09-01	黄梦侠 et al.		☒
	21	2781893	CN	Y	2006-05-24	赵永东		☒
	22	102013008020	DE	A1	2014-11-13	Baudermann		☒
	23	19526596	DE	A1	2004-12-16	Clamor et al.		☒

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	Filing Date	2022-11-10
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	24	202016101126	DE	U1	2016-06-21	Wu		☒
	25	2851555	DE	A1	1980-06-04	Adler et al.		☒
	26	29515642	DE	U1	1996-01-18	OTM MOEBELWERKE HELMUT SEIDEL		☒
	27	4424564	DE	A1	1996-01-18	Kluegl et al.		☒
	28	8606822	DE	U1	1991-08-14	PRINZESS-MOEBEL GUSTAV WERITZ		☒
	29	9302967	DE	U1	1993-04-22	JANZEN		☒
	30	0531385	EP	B1	1995-08-02	Lindahl		☐
	31	0613852	EP	B1	1997-11-05	Janzen		☒
	32	2745733	EP	A1	2014-06-25	Barea		☒
	33	3092918	EP	A1	2016-11-16	Campo		☐
	34	2637165	FR	A1	1990-04-06	Thoreau		☒

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	35	2894794	FR	A1	2007-06-22	Hoh		☒
	36	3028735	FR	A1	2016-05-27	Kalogeropoulos et al.		☒
	37	2012030022	JP	A	2012-02-16	Fukuhara et al.		☒
	38	2017045506	JP	A	2017-03-02	IGARASHI et al.		☒
	39	5861051	JP	B2	2016-02-16	牛尾　将蔵 et al.		☒
	40	100802663	KR	B1	2008-02-12	김명신		☒
	41	101635611	KR	B1	2016-07-11	Tae		☒
	42	101969133	KR	B1	2019-08-13	김진태 et al.		☒
	43	200479292	KR	Y1	2016-01-12	김승호		☒
	44	20140004886	KR	U	2014-09-03	Song		☒
	45	20160074221	KR	A	2016-06-28	Jung		☒

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	Filing Date	2022-11-10
	First Named Inventor	Nathan Mark Poniatowski
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	46	1011051	NL	C2	2000-07-19	Klaveren		☒
	47	1991017906	WO	A1	1991-11-28	Lindahl		☐
	48	2014180572	WO	A1	2014-11-13	Baudermann		☒
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	1	"Easylift Gas Springs: Technical Information," Web page, August 24, 2008, retrieved from Internet Archive Wayback Machine on August 29, 2022.	
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	3	ERGOTRON, http://www.ergotron.com, United States of America, 09/29/2014	
	4	Levine, James A. "Sitting down is KILLING you! Heart disease, obesity, depression and crumbling bones - a terrifying new book by a top doctor reveals they are all linked to the hours we spend in chairs" Daily Mail Online, July 26, 2014, 9 pages [online], [retrieved on 06-30-2017]. Retrieved from the Internet at: http://www.dailymail.co.uk/news/article-2706317	

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	Filing Date	2022-11-10
	First Named Inventor	Nathan Mark Poniatowski
	Art Unit	
	Examiner Name	
	Attorney Docket Number	1001-001US16

	5	LOHR, STEVE, Taking a Stand for Office Ergonomics, December 1, 2012, New York Times, United States, retrieved from http://www.nytimes.com/2012/12/02/business/stand-up-desks-gaining-favor-in-the-workplace.html on August 29, 2022.	

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	Filing Date	2022-11-10
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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

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The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

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A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Daniel T. Lund/	Date (YYYY-MM-DD)	2022-11-10
Name/Print	Daniel T. Lund	Registration Number	58614

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EFS ID:	47004990
Application Number:	17985137
International Application Number:	
Confirmation Number:	1419
Title of Invention:	DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY
First Named Inventor/Applicant Name:	Nathan Mark Poniatowski
Customer Number:	155431
Filer:	Daniel Thomas Lund
Filer Authorized By:	
Attorney Docket Number:	1001-001US16
Receipt Date:	10-NOV-2022
Filing Date:	
Time Stamp:	23:26:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

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RAM confirmation Number	E2022A0N28031628
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19	Non Patent Literature	KR101635611B1_translation.pdf	308824 677e71bf8ee0b17c075928d194c2ba71e72a83d3	no	5
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32	Foreign Reference	WO2014180572A1.pdf	523992 ea4cb77b9a328bd2734c0c6d3a2064d1ea9c1ecf	no	48
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33	Non Patent Literature	WO2014180572A1-Translation_US20160060084A1.pdf	1663251 a325d5745d0099490c1ba14396d287b8ced2b4cd	no	14
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40	Foreign Reference	WO2019001507A1.pdf	733777 07e4f000fc7fb9c1f240dbb617fbae65a0930937	no	29
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50	Non Patent Literature	CN2637251Y_translation.pdf	262168 3a3b5308e2ae9b5390d0795ec6b8d55bc5b0c4c4	no	4
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51	Foreign Reference	CN2781893Y.pdf	533369 82f7aefa7d8601058adc589f0f5ca98d4a7e7fb9	no	6
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52	Non Patent Literature	CN2781893Y_translation.pdf	244904 757ecc7d9e19a546621325c040d40bd459054eb9	no	4
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53	Foreign Reference	CN102599728A.pdf	542410 6791828098001999a65a111e2479b453ec6e14bc	no	11
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54	Non Patent Literature	CN102599728A_translation.pdf	359473 c94eb426e292e83daed36a67226ceca5862a28b0	no	6
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55	Foreign Reference	CN105124920A.pdf	498350 c7065dbbda2cfc14c1f3179fb7cbeab4cbce0cc8	no	9
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56	Non Patent Literature	CN105124920A_Translation.pdf	762441 e169ea7f0e0e8f316d51403c305b9f579a175bde	no	10
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57	Foreign Reference	CN107048694A.pdf	1074851 11e2df9b00c82b3ff8543733426a7d5bd3c579e7	no	17
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58	Non Patent Literature	CN107048694A_translation.pdf	344908 268ccfc6a0ef4b93fc58b665eacd8e9fa4310acd	no	6
Warnings:					
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59	Fee Worksheet (SB06)	fee-info.pdf	53153 9cf71682163feb8fff4bcbbafdf488f2897bb5d1	no	2
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DESCRIPTION KR101969133B1

11 Desk possible height-adjustment

[0001]

15 The present invention relates to a desk adjustable in height.

[0002]

19 In offices, schools, etc., a desk is equipped with a chair that a person can sit on, and a desk is provided so that it is convenient to place a computer and a book and perform work or education. Since such existing desks are made to have a uniform height, there is no separate function to adjust the height.

[0003]

26 People who work or take classes in the above space spend most of their time sitting, so they can suffer from mental and physical problems such as scoliosis, which causes the spine to curve, and eye fatigue due to the distance between the eyes and the book placed on the desk is out of focus. stress builds up

30 Due to this, there is a problem in that it is difficult to efficiently perform work because it has an adverse effect on the growth of a healthy mind and body.

[0004]

35 Recently, in consideration of this, a desk that can be used in a standing state by combining a relatively long support to the bottom of the top plate on which the computer and the book are supported has been popularized.

38 However, since it is more tiring to stand for a long time to work, there is a limit to solving the above-mentioned problems with such a desk.

[0005]

43 Taking regular breaks such as stretching and exercise from sitting for a long time can bring positive results to the body or mind, but there are many restrictions considering the situation of modern people who perform heavy tasks.

46 Accordingly, there is a demand for an ergonomic desk capable of continuously performing tasks while considering the user's health.

[0006]

51 In response to these demands, various types of height-adjustable desks have recently been introduced.

53 Some of these height adjustable desks have a form in which the entire desk moves up and down by using a motor, etc., but since they require an actuator such as a motor, manufacturing costs increase and the structure is complicated.

[0007]

59 As another example of the height-adjustable desk, a type of desk that allows a user to manually adjust the height of the desk has been introduced, including an elastic member such as a spring and a link member connected thereto.

62 In the case of the manually operated height adjustment desk as described above, the structure is simple and the manufacturing cost is low, but there is a problem in that the structure is not relatively strong.

[0008]

68 In particular, even when the process of adjusting the height and the height adjustment is completed and fixed, the link members supporting both sides of the desk move independently of each other, so that the desk is not stably supported and shakes.

[0009]

74 The present invention has been proposed to improve the above problems, and it is an object of the present invention to provide a height-adjustable desk in which the upper plate of the desk can be stably supported while having a simple structure compared to the prior art.

[0010]

81 One aspect of the present invention, a base and a top plate having a variable height with respect to the base;

[0011]

86 A first connecting member connecting the base and the upper plate, a second connecting member connecting the base and the upper plate and intersecting the first connecting member to form a rotation axis, the first connecting member and the second A cylinder connected to any one of the connecting members spaced apart from the rotation shaft, and a piston rod connected to the other of the first connecting member and the second connecting member, inserted into the cylinder, and disposed to face the upper plate A desk that can be adjusted in height is provided.

[0012]

96 In addition, the hollow of the piston rod and the cylinder may move toward the upper plate when the upper plate is raised or lowered.

[0013]

101 In addition, the first connecting member and the second connecting member cross to form a rotational shaft, the end of the cylinder is installed to be spaced apart from the rotational shaft by a first distance, and the piston rod is the first distance from the rotational shaft and It may be installed to be spaced apart by another second distance.

[0014]

109 In addition, an end of the piston rod may be installed at an end of the first connecting member or the second connecting member sliding on the upper plate.

[0015]

114 In addition, the cylinder and the piston rod have an inclination angle with respect to the base, and the inclination angle may be greater than 5 degrees and less than 70 degrees.

[0016]

120 In addition, when the upper plate is raised or lowered, the first connecting member, the second connecting member, the cylinder, and the piston rod may maintain a

triangular shape.

[0017]

126 In addition, the first connecting member or the second connecting member may include a bent gap forming portion.

[0018]

131 In addition, the first connecting member and the second connecting member are installed to face each other on both sides of the upper plate, and connect a pair of the first connecting members facing each other, or connect a pair of the second connecting members facing each other It may further include a link connector.

[0019]

138 In addition, when the upper plate is raised or lowered, the height of the cylinder and the piston rod may be changed while rotating about the rotation shaft.

[0020]

143 In addition, the first connecting member and the second connecting member may cross to form a first plane, and the cylinder and the piston rod may move in the first plane.

[0021]

149 In addition, the height - adjustable desk includes the first connecting member and the second connecting member so that the first connecting member and the second connecting member are rotatable to the upper plate or the base based on the rotation axis formed by crossing the first connecting member and the second connecting member. It is divided into a first area connected to, and a second area where the first connecting member and the second connecting member are connected to be slidable and rotatable to the upper plate or the base, and the cylinder and the piston rod are the second It can be installed in the area.

[0022]

160 In embodiments of the present invention, since the cylinder and the piston rod rotate while changing the height, the height of the desk can be adjusted to be high.

162 Since the height - adjustable desk is installed so that a cylinder and a piston rod connect the first and second connecting members, the height adjustment mechanism

rotates while changing the height when the upper plate is raised or lowered to keep the height of the upper plate high. can

166 That is, since the cylinder and piston rod have a large rotation angle, the height of the upper plate can be adjusted with a small stroke.

[0023]

171 In embodiments of the present invention, since the cylinder into which the piston rod is inserted is disposed to face the upper plate, it is possible to prevent leakage of oil and the like.

[0024]

177 1 is a perspective view showing a desk adjustable in height according to a first embodiment of the present invention.

179 Figure 2 is a perspective view showing a height - adjustable desk in which the upper plate and the base are separated;

181 3 is an enlarged perspective view of A of FIG. 1 .

182 Figure 4 is a side view for explaining the height adjustment mechanism according to the first embodiment of the present invention.

184 5 is a perspective view showing a state in which the upper plate is moved downward according to the first embodiment of the present invention.

186 6 is a perspective view showing a state in which a fixed leg is coupled to a desk whose height can be adjusted according to the first embodiment of the present invention.

189 7 is an exploded perspective view of the height - adjustable desk and the fixed legs according to the first embodiment of the present invention.

191 8 is a perspective view of a desk adjustable in height according to a second embodiment of the present invention.

193 9 is a perspective view showing a state in which the auxiliary support according to the second embodiment of the present invention is separated.

195 10 is a perspective view of a desk adjustable in height according to a third embodiment of the present invention.

197 11 is an enlarged view for explaining the coupling structure of the height adjustment mechanism according to the third embodiment of the present invention.

199 12 is a perspective view showing a state in which the upper plate is moved downward according to the third embodiment of the present invention.

201 13 is a perspective view of a desk adjustable in height according to a fourth embodiment of the present invention.

203 14 is a perspective view illustrating a height - adjustable desk in which a top plate and a base are separated according to a fourth embodiment of the present invention.

205 15 is a perspective view showing a state in which the upper plate is moved

downward according to the fourth embodiment of the present invention.

207 16 is a perspective view illustrating a height - adjustable desk according to a fifth embodiment of the present invention.

209 17 is a side view when the upper plate of the fifth embodiment of the present invention is raised.

211 18 is a side view when the upper plate of the fifth embodiment of the present invention is lowered to the lowest height.

213 19 is a cross - sectional view when the upper plate of the sixth embodiment of the present invention is lifted limited by a stopper.

215 20 is a cross - sectional view when the upper plate of the sixth embodiment of the present invention is restricted from being lowered by a stopper.

217 21 is a rear perspective view of a desk adjustable in height according to a seventh embodiment of the present invention.

219 22 is an enlarged perspective view of the leveling unit according to the seventh embodiment of the present invention.

221 23 is a perspective view illustrating a height - adjustable desk according to an eighth embodiment of the present invention.

223 24 is a perspective view showing a height - adjustable desk according to a ninth embodiment of the present invention.

225 25 is a perspective view illustrating a height - adjustable desk according to a tenth embodiment of the present invention.

227 26 is a perspective view illustrating a height - adjustable desk according to an eleventh embodiment of the present invention.

229 27 is a perspective view when the upper plate of the height - adjustable desk according to the twelfth embodiment of the present invention is raised.

231 28 is a perspective view when the upper plate of the height - adjustable desk according to the twelfth embodiment of the present invention is lowered.

233 29 is a perspective view illustrating a height - adjustable desk according to a thirteenth embodiment of the present invention.

235 30 is a side view illustrating a height - adjustable desk according to a thirteenth embodiment of the present invention.

237 Fig. 31 is a perspective view showing a modified example of the thirteenth embodiment.

[0025]

242 Hereinafter, specific embodiments of the present invention will be described in detail with drawings.

[0026]

247 Hereinafter, the embodiments disclosed in the present specification will be described

in detail with reference to the accompanying drawings, but the same or similar components are assigned the same reference numbers regardless of reference numerals, and redundant description thereof will be omitted.

251 The suffix " part " for components used in the following description is given or mixed in consideration of only the ease of writing the specification, and does not have a meaning or role distinct from each other by itself.

254 In addition, in describing the embodiments disclosed in the present specification, if it is determined that detailed descriptions of related known technologies may obscure the gist of the embodiments disclosed in the present specification, the detailed description thereof will be omitted.

258 In addition, the accompanying drawings are only for easy understanding of the embodiments disclosed in the present specification, and the technical idea disclosed herein is not limited by the accompanying drawings, and all changes included in the spirit and scope of the present invention , should be understood to include equivalents or substitutes.

[0027]

266 1 is a perspective view showing a height - adjustable desk according to a first embodiment of the present invention, FIG. 2 is a perspective view showing a height - adjustable desk with a top plate and a base separated, and FIG. 3 is an enlarged view of A in FIG. It is a perspective view.

[0028]

273 1 to 3 , the height - adjustable desk 100 according to the first embodiment of the present invention may include a base 120 and a top plate 110 .

[0029]

278 The base 120 may form the lower part of the desk 100 adjustable in height, and the lower surface may be in contact with the ground or the floor to support the desk 100 adjustable in height.

281 A depression groove 122 that is depressed by a predetermined distance toward the rear may be formed in the front of the base 120 .

283 The recessed groove 122 can accommodate a part of the user's body, and when the user is positioned in front of the height - adjustable desk 100 , the user can get closer to the height - adjustable desk 100 .

[0030]

289 The upper plate 110 is formed in a substantially plate shape.

290 In some cases, the upper plate 110 may be formed to correspond to the cross - sectional shape of the base 120 including the recessed groove 122 .

292 A user's work or learning tools may be placed on the upper surface of the upper plate 110 .

294 For example, various tools such as a monitor, a book, and a keyboard may be placed on the upper surface of the upper plate 110 .

[0031]

299 In addition, a wiring receiving groove 187 recessed toward the front may be formed in the rear portion of the upper plate 110 .

301 The wiring accommodating groove 187 may be provided in the upper plate 110 by recessing a portion of the rear portion of the upper plate 110 inward.

303 A portion of the work tools placed on the upper plate 110 may be accommodated in the wiring receiving groove 187 .

305 For example, when the computer monitor is placed on the top plate 110 , the wiring providing power to the computer monitor is accommodated in the wiring receiving groove 187 so that it can be neatly arranged.

[0032]

311 The height - adjustable desk connects the top plate 110 and the base 120 , and may include a height adjustment means for adjusting the height of the top plate 110 with respect to the base 120 .

[0033]

317 The height adjusting means may be provided to be positioned below the upper plate 110 .

319 The height adjusting means may be disposed between the base 120 and the upper plate 110 .

[0034]

324 The height adjusting means may include a link mechanism disposed between the base 120 and the upper plate 110 to support the upper plate 110 to be lifted.

326 The height adjusting means may include a driving source that presses the upper plate 110 in the upward direction when the user operates it.

[0035]

331 The height adjusting means may include a plurality of connecting members 130 and

140 for relatively moving the upper plate 110 with respect to the base 120 .

333 The plurality of connecting members 130 and 140 may elevate the upper plate 110 so that the distance between the upper plate 110 and the base 120 is changed.

[0036]

338 The plurality of connecting members 130 and 140 may be respectively provided on both sides between the upper plate 110 and the base 120 .

340 The plurality of connecting members 130 and 140 include a first connecting member 130 extending from the rear bottom surface of the upper plate 110 toward the front upper surface of the base 120 , and the base from the front lower surface of the upper plate 110 . and a second connecting member 140 extending toward the upper surface of the rear side of the 120 .

345 The first connecting member 130 and the second connecting member 140 may be disposed to cross each other between the upper plate 110 and the base 120 .

347 The first connecting member 130 and the second connecting member 140 may be arranged to form an approximately 'X' shape when viewed from the side.

[0037]

352 The first connecting member 130 has one end coupled to the first coupling unit 160 provided on the upper surface of the front side of the base 120, and the other end of the first moving frame provided on the lower surface of the rear side of the upper plate 110 (It is coupled with the first moving part 169 slidingly moved to the 165 .

356 The first coupling part 160 and the first moving frame 165 are respectively provided on both sides of the upper surface of the base 120 and the lower surface of the upper plate 110 in correspondence with the number of the first connecting members 130 .

[0038]

363 The first coupling part 160 is a first horizontal part 164 having a lower surface coupled to the upper surface of the base 120 through a screw or a link, and extends upward from one side of the first horizontal part 164 to the first It includes a first vertical portion 162 to which one end of the connecting member 130 is coupled.

367 Then, one end of the first connecting member 130 is hinged to the side surface of the first vertical part 162 to be rotatable.

369 That is, one end of the first connecting member 130 is rotatably coupled by the hinge pin 131 passing through the first vertical portion 162 from the first connecting member 130 .

[0039]

375 The first moving frame 165 is provided on both sides of the rear side of the upper plate 110, respectively.

377 The first moving frame 165 includes a first upper surface portion 166 having an upper surface coupled to a lower surface of the upper plate 110 , and a first side portion 167 extending downward from one side of the first upper surface portion 166 . and a first lower surface portion 168 extending inwardly from an end of the first side surface portion 167 .

382 The cross - sectional shape of the first moving frame 165 by the first upper surface portion 166, the first side portion 167 and the first lower surface portion 168 forms an approximately U - shape.

385 And, in the space formed by the first upper surface portion 166, the first side portion 167, and the first lower surface portion 168 of the first moving frame 165, the outer surface of the first moving unit 169 is in contact and sliding. can be moved

[0040]

391 The other end of the first connecting member 130 is hinged to the side surface of the first moving unit 169 , and when the first moving unit 169 slides the first moving frame 165 , the first connecting member 130 . slope is changed.

394 In other words, the angle between the first connecting member 130 and the upper plate 110 and the base 120 is changed through the hinge coupling with the first vertical part 162 and the hinge coupling with the first moving part 169 . .

397 As shown in FIG. 2, when the angle between the first connecting member 130 and the base 120 is relatively high, the first moving part 169 is located close to the front of the first moving frame 165, When the angle between the first connecting member 130 and the base 120 is relatively low, the first moving part 169 is located close to the rear of the first moving frame 165 .

402 At the same time as the other end of the first connecting member 130 is slidably moved, one end of the first connecting member 130 may be rotated through the first coupling unit 160 .

[0041]

408 The second connecting member 140 has one end coupled to the second coupling portion 145 provided on the lower surface of the front side of the upper plate 110, and the other end of the second moving frame provided on the upper surface of the rear side of the base 120 (It is coupled to the second moving unit 144 slidingly moved to 170 .

413 The second coupling portion 145 and the second moving frame 170 are respectively provided on both sides of the upper surface of the base 120 and the lower surface of the upper plate 110 in correspondence with the number of the second connecting

members 140 .

[0042]

420 The second coupling portion 145 includes a second horizontal portion 146 having an upper surface coupled to the lower surface of the upper plate 110 through a screw or a link, and extending downwardly from one side of the second horizontal portion 146 to the first It includes a second vertical portion 147 to which one end of the second connecting member 130 is coupled.

425 In addition, one end of the second connecting member 140 may be hinged to the side surface of the second vertical part 147 to be rotatable.

427 That is, one end of the second connecting member 140 may be rotatably coupled by a hinge pin passing through the second vertical portion 147 from the second connecting member 140 .

[0043]

433 The second moving frame 170 is provided on both sides of the upper surface of the rear side of the base 120, respectively.

435 The second moving frame 170 includes a second lower surface portion 172 having a lower surface coupled to the upper surface of the base 110, and a second side portion 174 extending upward from one side of the second lower surface portion 172 and , including a second upper surface portion 176 extending outwardly from an end of the second side portion 174 .

440 The cross - sectional shape of the second moving frame 165 by the second lower surface portion 172, the second side surface portion 174, and the second upper surface portion 176 forms an approximately U - shape.

443 In addition, in the second moving frame 170, a second moving part (144) is provided.

[0044]

448 The other end of the second connecting member 140 is hinged to the side surface of the second moving unit 144 , and when the second moving unit 144 slides on the second moving frame 170 , the second connecting member 140 is hinged.) is changed.

452 In other words, the angle between the second connecting member 140 and the upper plate 110 and the base 120 is changed through the hinge coupling with the second vertical part 147 and the hinge coupling with the second moving part 144 . .

455 2, when the angle between the second connecting member 140 and the base 120 is relatively high, the second moving part 144 is located close to the front of the second moving frame 170. When the angle between the second connecting member

130 and the base 120 is relatively low, the second moving part 144 is positioned close to the rear of the second moving frame 170 .

460 While the other end of the second connecting member 140 is slidably moved, one end of the second connecting member may be rotated through the second coupling part 145 .

[0045]

466 In summary, the first coupling part 160 and the second coupling part 145 may be provided so as to be symmetrical to each other on the lower surface of the upper plate 110 and the upper surface of the base 120 , and the first moving frame 165 and the second coupling part 145 . 2 The moving frame 170 may be provided so as to be symmetrical to each other on the lower surface of the upper plate 110 and the upper surface of the base 120 .

[0046]

475 On the other hand, a rotation shaft 150 having a center of rotation is fitted in a region where the first connection member 130 and the second connection member 140 cross each other.

478 In detail, both ends of the rotation shaft 150 may be fitted in regions where a plurality of connecting members 130 and 140 disposed on both sides intersect each other.

481 To this end, in the region where the first connection member 130 and the second connection member 140 intersect, through holes (not shown) corresponding to each other are formed so that the rotation shaft 150 is fitted, and the rotation shaft is formed in the through hole. Both ends of 150 are fitted and fixed.

485 Accordingly, the first connecting member 130 and the second connecting member 140 may be rotated relative to each other through the rotation shaft 150 .

487 In other words, the rotation shaft 150 may form a central axis of an 'X' shape formed by the first connecting member 130 and the second connecting member 140 .

[0047]

492 In addition, a plurality of first connection members 130 are provided on both sides of the desk 100 that are adjustable in height so that the plurality of first connection members 130 can be operated in parallel to each other. A connecting member connector (not shown) for connecting may be provided.

496 In this embodiment, the coupling shaft 155 connected to the inner surface of the plurality of first connection members 130 may function as a connection member connector.

[0048]

502 In addition, a plurality of second connection members 140 are provided on both sides of the desk 100 that are adjustable in height so that the plurality of second connection members 140 can be operated in parallel to each other. A connector 142 for connecting may be provided.

[0049]

509 Figure 4 is a side view for explaining the height adjustment mechanism according to the first embodiment of the present invention.

[0050]

514 1 and 4 , the height - adjustable desk 100 may include a height - adjusting mechanism 180 installed so that the height of the top plate 110 is variable.

516 The height adjustment mechanism 180 may include at least one of a gas spring and a hydraulic slider.

[0051]

521 The plurality of first connecting members 130 may be positioned to face each other, and both ends of the coupling shaft 155 are fitted to the plurality of first connecting members 120 .

524 The coupling shaft 155 may have a configuration in which an end of the height adjustment mechanism 180 to be described later is coupled, and may be horizontally disposed between the inner surfaces of the plurality of first connecting members 130 provided, 1 It is inserted into the connection member 130 and is fixed.

[0052]

531 And, the front side lower surface of the upper plate 110 is provided with a height adjustment mechanism coupling portion 115 into which another end of the height adjustment mechanism 180 is fitted.

534 The height adjustment mechanism coupling part 115 may be disposed to be close to the front end of the lower surface of the upper plate 110 .

536 In detail, the height adjustment mechanism coupling part 115 extends downward from one side of the coupling part body 116 coupled to the lower surface of the upper plate 110 and the coupling part body 116 so that the end of the height control mechanism 180 is It may include a coupling part extension body 117 having a shaft to pass therethrough.

541 The height adjustment mechanism coupling part 115 may be provided in plurality to

each other symmetrically with respect to the center.

[0053]

546 And, in order to adjust the height of the upper plate 110, one end is fitted into the height adjustment mechanism coupling portion 115, the other end is fitted with the height adjustment mechanism 180 is fitted to the coupling shaft 155 is provided.

549 As shown in FIG. 4 , the height adjustment mechanism 180 includes a hollow tube - shaped cylinder 181 , and a piston rod 182 inserted into the hollow portion of the cylinder 181 .

552 Then, a hole 184a is formed in the coupling portion 184 disposed under the cylinder 181 , and the coupling shaft 155 passes through the hole 184a to fix the other end of the height adjusting mechanism 180 .

555 In addition, a hole 182a is formed in the upper portion of the piston rod 182 so that the shaft provided in the coupling part extended body 117 passes likewise, and the height of the coupling part extended body 117 is adjusted by passing the hole 182a. One end of the instrument 180 is fixed.

[0054]

562 On the other hand, the height adjustment mechanism 180 has a configuration in which the length of the piston rod 182 can be changed by vertically moving with respect to the cylinder 181 .

565 That is, gas is injected into the cylinder 181 , and the position of the piston rod 182 is changed through the pressure applied to the piston rod 182 by the gas.

567 A gas opening/closing pin for selectively opening/closing the internal gas and an opening/closing guide for operating the gas opening/closing pin are provided on the upper side of the piston rod 182, and one end of the cable 189 is connected to the opening/closing guide.

571 Accordingly, the gas in the height adjustment mechanism 180 is moved by the operation in which the cable 189 is pulled, and the piston rod 182 can be moved up and down by the pressure.

574 And, when the pulling force of the cable 189 is released, the position of the piston rod 182 may be fixed.

[0055]

579 In the present specification, the height adjustment mechanism 180 is a configuration in which the cable 189 is pulled through the operation of the button unit 195 to adjust the overall length, and if the length is adjusted using the pressure of gas or fluid, the height is adjusted It may be employed in the possible desk 100 .

583 In other words, the height adjustment mechanism 180 may employ a hydraulic

cylinder whose length may be varied through the pressure of fluid and air in addition to the gas spring.

[0056]

589 On both lower sides of the upper plate 110 , the manipulation unit 190 is provided so that the button unit 195 into which the other end of the cable 189 is fitted is disposed.

592 That is, in this embodiment, since two height adjustment mechanisms 180 are provided as an example, the manipulation units 190 are also respectively provided on both lower sides of the upper plate 110 .

595 Accordingly, the cable 189 has one end inserted into the piston rod 182 and the other end inserted into the button unit 195, so that the pressing force of the button unit 195 is transmitted to the opening/closing guide through the cable 189, so that the height adjustment mechanism (180) may vary in length.

[0057]

602 Hereinafter, a process for adjusting the height of the height - adjustable desk 100 will be described.

[0058]

607 5 is a perspective view showing a state in which the upper plate is moved downward according to the first embodiment of the present invention.

[0059]

612 1 and 5 , in the height - adjustable desk 100 according to the first embodiment of the present invention, the height of the top plate 110 is variable.

614 As an example of use, the height - adjustable desk 100 may be placed on the upper surface of another height - adjustable desk.

616 At this time, when the upper plate 110 is positioned close to the base 120 as shown in FIG. 5 , the user will perform the work in a seated state.

618 And, when the top plate 110 is moved upward as in FIG. 1 , it can take a standing state at the eye level of the top plate 110 .

[0060]

623 When the operation process is described in detail, a push is applied to the button unit 195 through a user's operation, and an external force is transmitted to the height adiustment mechanism 180 via the cable 189 .

626 That is, in a state in which the button unit 195 is pushed, it is understood as a state in which the length of the height adjustment mechanism 180 can be varied.

628 In other words, in the state in which the button unit 195 is pushed, the upper plate 110 is moved upwardly away from the base 120 by the pressure of the gas inside the height adjusting mechanism 180 .

631 That is, the height adjustment mechanism 180 may be configured such that the internal gas exerts pressure due to the push of the button unit 195 , and the piston rod 182 rises upward so that the length thereof is extended.

[0061]

637 When the height of the upper plate 110 is increased, the button part 195 is pushed, and when the height of the upper plate 110 is lowered, the upper plate 110 is pushed downward in a state in which the button part 195 is pushed. will do

640 By this user's operation, the height of the height adjustment mechanism 180 is varied, and the first moving unit 169 and the second moving unit 144 move the first moving frame 165 and the second moving frame 170, respectively.) can be moved by sliding.

644 When the pressing force applied to the button unit 195 is released, the height adjustment of the upper plate 110 may be stopped even during movement.

646 Accordingly, the height of the upper plate 110 may be variously varied between the heights shown in FIGS. 1 and 5 .

[0062]

651 For example, when the upper plate 110 is moved downward, the length of the height adjusting mechanism 180 is shortened by the user's downward pushing force, and the second moving part 144 is the second moving frame 170 .) will slide backwards on top.

655 And, the upper end of the first connecting member 130 and the second connecting member 140 is moved downward so that the angle formed with the base 120 is reduced.

[0063]

661 When the upper plate 110 is moved upward, by pushing only the button part 195 , the length of the height adjustment mechanism 180 is increased, and the second moving part 144 is moved forward on the second moving frame 170 . will be moved by sliding.

665 And, the upper end of the first connecting member 130 and the second connecting member 140 is moved upward so that the angle formed with the base 120 is increased.

[0064]

671 As described above, the height - adjustable desk 100 can adjust the height of the top plate 110 with a simple operation through the operation of the button unit 195 , thereby increasing user convenience.

674 In addition, a user who sits for a long time will be able to perform a more active task by adjusting the height of the upper plate 110 in various ways.

[0065]

679 6 is a perspective view showing a state in which the fixed legs are combined with the height - adjustable desk according to the first embodiment of the present invention, and FIG. 7 is an exploded perspective view of the height - adjustable desk and the fixed legs according to the first embodiment of the present invention. am.

[0066]

686 6 and 7, the lower surface of the base 120 may be provided with a fixed leg 200 that supports the height - adjustable desk 100 and separates the height - adjustable desk 100 from the ground.

689 As described above, the height - adjustable desk 100 can be placed on the upper surface of another height - adjustable desk, but another height - adjustable desk is required. It can be used alone.

[0067]

695 The fixed leg 200 includes a base coupling part 202 coupled to the bottom surface of the base 120, and a leg coupling part 209 to which the leg 210 separating the stationary leg 200 from the ground is coupled to the lower surface thereof; and a fixed leg body 205 connecting the base coupling part 202 and the leg coupling part 209 to each other.

[0068]

703 The cross - sectional shape of the base coupling part 202 is formed to correspond to the cross - sectional shape of the bottom surface of the base 120 and is coupled to the bottom surface of the base 120 .

706 In addition, a leg 210 is provided on the lower surface of the leg coupling part 209 so that the fixed leg 200 may be spaced apart from the ground.

708 The legs 210 may be provided at all four corners of the lower surface of the leg coupling portion 209 .

[0069]

713 The fixed leg body 205 connects the base coupling part 202 and the leg coupling part 209 and extends in the longitudinal direction to form the height of the desk 100 adjustable in height.

716 The height of the fixed leg body 205 may be variously adjusted and manufactured according to the intention and purpose of the user.

[0070]

721 Therefore, by providing the fixed legs 200 at the lower part of the height - adjustable desk 100, the height - adjustable desk 100 can be used alone, and the height of the top plate 110 even when the fixed legs 200 are coupled. You can change the user's work environment in various ways by adjusting the

[0071]

728 On the other hand, a support leg may be coupled to the lower surface of the base 120 .

730 The support legs may be respectively coupled to the four corners of the lower surface of the base 120 to support the height - adjustable desk 100 .

[0072]

735 The support leg may be configured such that the vertical length from the ground to the height - adjustable desk 100 can be adjusted by moving the lower part of the fixed leg (199b) up and down with respect to the upper part of the fixed leg.

[0073]

741 8 is a perspective view of a desk adjustable in height according to a second embodiment of the present invention, and FIG. 9 is a perspective view showing a state in which the auxiliary stand according to the second embodiment of the present invention is separated.

[0074]

748 This embodiment is the same as the first embodiment in other parts, except that there is a difference in the auxiliary pedestal.

750 Therefore, in the following, only characteristic parts of the present embodiment will be described, and the same parts as those of the first embodiment will be referred to

in the first embodiment.

[0075]

756 8 and 9 , the desk 220 adjustable in height according to the present embodiment may further include a plate - shaped auxiliary support 230 disposed under the upper plate 110 .

759 The auxiliary pedestal 230 has an upper surface coupled to a lower surface of the second vertical part 147 of the second coupling part 145 .

[0076]

764 In detail, a link hole 231 penetrating through the lower surface from the upper surface may be formed in the auxiliary pedestal 230 .

766 Link holes 231 are respectively formed on both sides adjacent to the rear of the auxiliary pedestal 230 .

768 And, a link groove (not shown) is formed on the lower surface of the second vertical part 147 so that the link member 148 for coupling the auxiliary pedestal 230 and the second vertical part 147 is fitted.

[0077]

774 The auxiliary support 230 is coupled to the lower surface of the second vertical part 147 disposed in plurality on both sides of the lower side of the upper plate 110 so that the link hole 231 and the link groove correspond to each other. Butt, it can be made through the link member (148).

778 In addition, by increasing the number of the link hole 231 and the link member 148, it is also possible to more firmly fix the auxiliary support 230 to the lower side of the upper plate (110).

[0078]

784 Therefore, in this embodiment, more work tools can be placed by additionally providing the auxiliary pedestal 230 to the height - adjustable desk 220 .

786 For example, when a computer monitor is disposed on the upper surface of the upper plate 110 , a keyboard is provided on the upper surface of the auxiliary pedestal 230 , thereby providing a wider free space on the upper surface of the upper plate 110 .

[0079]

792 On the other hand, the base 120 may be provided with a side wall 125 along the edge so that the upper surface of the base 120 is covered.

794 The side wall 125 is formed to have a height higher than the upper surface of the base 120 and is coupled to the side surface of the base 120 .

796 When the side wall 125 is coupled, it is possible to prevent dust, foreign substances, etc. from accumulating on the upper surface of the base 120 , and there is an advantage that the appearance of the desk 220 adjustable in height can be formed more stylishly.

[0080]

803 Figure 10 is a perspective view of a desk adjustable in height according to a third embodiment of the present invention, Figure 11 is an enlarged view for explaining the coupling structure of the height adjustment mechanism according to the third embodiment of the present invention, Figure 12 is this It is a perspective view showing a state in which the upper plate is moved to the lower part according to the third embodiment of the present invention.

[0081]

812 This embodiment is the same as the first embodiment in other parts, except that there is a difference in the coupling position of the height adjustment mechanism.

814 Therefore, in the following, only characteristic parts of the present embodiment will be described, and the same parts as those of the first embodiment will be referred to in the first embodiment.

[0082]

820 10 to 12 , in the height - adjustable desk 300 according to the third embodiment of the present invention, a height - adjusting mechanism 180 is provided on the upper surface of the base 120 .

[0083]

826 In detail, the height - adjustable desk 300 includes the upper plate 110 and the lower plate 120, and the first connecting member 130 for relatively moving the upper plate 110 between the upper plate 110 and the lower plate 120. and a second connecting member 140 .

830 And, one end of the second connecting member 140 is hinge - coupled to the second vertical portion 147 of the second coupling portion 145 provided on the upper surface of the front side of the upper plate 110, and the second connecting member 140 The other end is hinge - coupled to one surface of the second moving unit 144 slidingly moved on the second moving frame 170 .

[0084]

838 At this time, in the height adjusting mechanism 180 , the end of the piston rod 182 is coupled to the other end of the second connecting member 140 , opposite to the surface coupled to the second moving part 144 .

841 That is, one surface of the other end of the second connecting member 140 is coupled to the second moving part 144 , and the other surface of the other end of the second connecting member 140 is coupled to the end of the piston rod 182 .

844 In some cases, the piston rod 182 penetrates the other end of the second connecting member 140 through a hole 182a (see FIG. 4) formed at the end and inserts a pin P inserted into the second moving part 144 . can be combined through

[0085]

850 Accordingly, the height adjustment mechanism 180 extends to the rear of the base 120 of the cylinder 181 in a state in which the end of the piston rod 182 is coupled to the other end of the second connecting member 140 , and It may be located on the upper surface.

854 Meanwhile, as in the first embodiment, the cable 189 extending from one side of the upper piston rod 182 to selectively press the opening/closing guide is connected to the button unit 195 provided on the lower surface of the upper plate 110 . being manipulated by the user.

[0086]

861 And, the height adjustment of the height adjustable desk 300 according to the third embodiment of the present invention is performed in the same manner as the height adjustment process according to the first embodiment.

864 That is, the user can adjust the height of the upper plate 110 by pushing the upper plate 110 downward or pulling upward while pushing the button unit 195 .

[0087]

869 13 is a perspective view of a height - adjustable desk according to a fourth embodiment of the present invention, and FIG. 14 is a perspective view showing a height - adjustable desk in which a top plate and a base are separated according to a fourth embodiment of the present invention, and FIG. 15 is a perspective view showing a state in which the upper plate is moved downward according to a fourth embodiment of the present invention.

[0088]

878 This embodiment is the same as the first embodiment in other parts, except that there is a difference in the position of the height adjustment mechanism.

880 Therefore, in the following, only characteristic parts of the present embodiment will be described, and the same parts as those of the first embodiment will be referred to in the first embodiment.

[0089]

886 13 to 15 , in the height - adjustable desk 400 according to the fourth embodiment of the present invention, the top plate 110 is positioned above the base 120 with the second connecting member 140 and the height adjustment mechanism. (180) is supported.

890 That is, in this embodiment, the first connecting member 130 is excluded.

[0090]

894 In detail, the second connecting member 140 has one end coupled to the second coupling part 145 provided on the lower surface of the front side of the upper plate 110 , and the other end of the second moving member provided on the upper surface of the rear side of the base 120 . It is coupled to the second moving part 144 slidingly moved to the frame 170 .

899 In addition, the height adjustment mechanism 180 has one end coupled to the first coupling unit 160 provided on the upper surface of the front side of the base 120 , and the other end of the first moving frame provided on the lower surface of the rear side of the upper plate 110 . It is coupled with the first moving part 169 slidingly moved to the 165 .

904 In other words, the height adjustment mechanism 180 is disposed at the position of the first connection member 130 according to the first embodiment of the present invention.

[0091]

910 One end of the height adjustment mechanism 180 is coupled to one surface of the first vertical part 162 through a pin 403 penetrating a hole 184a (see FIG. 4) formed at the end of the cylinder 181 .

913 The other end of the height adjustment mechanism 180 is coupled to one surface of the first moving part 169 through a pin 405 penetrating a hole 182a formed at an end of the piston rod 182 .

916 The coupling via pins 403 and 405 may be a hinge coupling.

[0092]

920 Therefore, in this embodiment, the height adjustment mechanism 180 is provided between the upper plate 110 and the base 120, the length is variable according to the vertical movement of the piston rod (182).

923 That is, as shown in FIG. 15 , the piston rod 182 is inserted into the cylinder 181 and the length of the height adjusting mechanism 180 is shortened, the upper plate 110 is moved downward, and the piston rod 182 is reduced. When the length of the height adjustment mechanism 180 is increased by falling out of the cylinder 181, the upper plate 110 is moved upward.

[0093]

931 Since the operation method of the height - adjustable desk 400 according to the present embodiment is the same as the operation method of the height - adjustable desk 100 according to the first embodiment through operation of the button unit 195, the description thereof is to be omitted.

[0094]

938 Therefore, in the present embodiment, by replacing the first connecting member with the height adjustment mechanism 180, the number of parts is reduced and accordingly, the manufacturing cost is reduced.

[0095]

944 16 is a perspective view showing a desk adjustable in height according to a fifth embodiment of the present invention, FIG. 17 is a side view when the upper plate of the fifth embodiment of the present invention is raised, and FIG. 18 is a fifth embodiment of the present invention Example This is a side view when the upper plate is lowered to the lowest height.

[0096]

952 16 to 18, the height - adjustable desk includes a base 120; top plate 110 and; It may include a link mechanism (L) disposed between the base 120 and the upper plate 110 to support the upper plate 110 to be elevating.

[0097]

958 The top plate 110 may include a top plate 111 and an upper frame 112 coupled to a lower portion of the top plate 111 .

[0098]

963 The top plate 111 may be formed in a plate shape, and a user may place a monitor, a phone, or various documents on the top surface of the top plate 111 .

[0099]

968 A plurality of upper frames 112 may be disposed under the top plate 111 .

969 In this case, the plurality of upper frames 112 may be spaced apart from each other in the left and right directions under the top plate 111 .

971 The plurality of upper frames 112 may include a left upper frame disposed under a left portion of the top plate 111 and a right upper frame disposed under a right portion of the top plate 111 .

[0100]

977 The upper frame 112 may be hinge - coupled to any one of the pair of links L1 and L2, and may guide the other of the pair of links L1 and L2.

979 The upper frame 112 may be coupled to the top plate 111 to be positioned on the bottom of the top plate 111 .

981 The upper frame 112 may be mounted to the top plate 111 by a fastening member such as a screw or a hook such as a hook.

983 The upper frame 112 may include an upper plate part coupled to the top plate 111 and a side plate part vertically bent from the upper plate part.

[0101]

988 The upper plate 110 may further include a lower plate 113 spaced apart from the top plate 111 .

990 The lower plate 113 may be disposed to have a height difference from the top plate 111 .

992 A user may place a keyboard or mouse on the upper surface of the lower plate 113 .

[0102]

996 The lower plate 113 may be connected to at least one of the top plate 111 and the upper frame 112 through the plate connector 114 .

998 The plate connector 114 may be installed such that the top plate 111 and the lower plate 113 have a step difference, and the lower plate 113 may be suspended from the plate connector 114 .

1001 The lower plate 113 may be mounted under the plate connector 114 by a fastening member such as a screw or a hook portion such as a hook.

[0103]

1006 A plurality of plate connectors 114 may be disposed under the top plate 111 .

1007 The plurality of plate connectors 114 may be positioned to be spaced apart from each other in the left and right directions under the top plate 111 .

1009 The plurality of plate connectors 114 may include a left plate connector disposed under a left portion of the top plate 111 and a right plate connector disposed under a right portion of the top plate 111 .

[0104]

1015 The lower plate 113 may be connected to the left plate connector and the right plate connector.

[0105]

1020 The base 120 may include a lower frame 121 .

1021 The lower frame 121 may be positioned to be spaced apart from the upper plate 110 in the vertical direction.

1023 A plurality of lower frames 121 may be disposed to be spaced apart from each other.

1025 The plurality of lower frames 121 may include a lower left frame positioned under the left side of the upper plate 110 and a lower right frame positioned under the right side of the upper plate 110 .

1028 The left lower frame and the right lower frame may be spaced apart from each other in the left and right directions.

[0106]

1033 The base 120 may further include a frame connector 123 connecting the plurality of lower frames.

1035 The lower left frame and the lower right frame may be connected by a frame connector 123 .

1037 The lower left frame may be disposed elongated in the front - rear direction under the upper plate 110 , and the lower right frame may be disposed elongated in the front - rear direction under the upper plate 110 , and the lower left frame and the lower right frame may be disposed in the left - right direction. can be spaced apart.

1041 The frame connector 123 may be elongated in the left and right directions to connect the left lower frame and the right lower frame, the left part may be connected to the left lower frame, and the right part may be connected to the right lower frame.

[0107]

1048 The link mechanism L may include a left link mechanism connecting the lower left frame and the upper left frame, and a right link mechanism connecting the lower right frame and the upper right frame.

[0108]

1054 The link mechanism L may include a pair of links L1 and L2 rotatably connected to the rotation shaft 150 .

1056 The left link mechanism and the right link mechanism may have the same structure, and may be symmetrically disposed on the lower side of the top plate 111 .

1058 Each of the left link mechanism and the right link mechanism may include a pair of links L1 and L2 rotatably on the rotation shaft 150 .

[0109]

1063 Hereinafter, since the left link mechanism and the right link mechanism have the same structure, they will be referred to as link mechanisms L to avoid overlapping descriptions below.

[0110]

1069 At least one of the pair of links (L1) (L2) is a gap forming part (130A) (140A).

[0111]

1073 The height - adjustable desk can be configured such that the top plate 110 is lowered only to a height that does not come into contact with the base 120, and the gap G of this set height allows the body part such as the user's fingers to pass between the top plate 110 and the base. It can be prevented from being pinched between the 120, and the safety of the desk adjustable in height can be improved.

[0112]

1081 The height - adjustable desk is installed on any one of the top plate 110 and the base 120 when the top plate 110 is lowered to a predetermined height or less, and a separate spacer having a set height is installed on the top plate 110 and the base 120. In contact with the other of the upper plate 110 and the base 120 may form a gap (G) of a set height.

1086 In this case, the spacer installed on any one of the upper plate 110 and the base 120 may be a gap forming part.

[0113]

1091 When a pair of links (L1) (L2) are folded to lower the height of the height-adjustable desk, a protrusion provided to protrude on any one of the pair of links (L1) (L2) is a pair of links (L1) (L2) in contact with the other one of the pair of links (L1) (L2) can be limited not to be folded below a predetermined angle, the upper plate 110 and the base 120 is a gap (G) can be formed.

1096 In this case, the protrusion provided to protrude from any one of the pair of links L1 and L2 may be a gap forming part.

[0114]

1101 The height-adjustable desk may include a magnet that restricts the upper plate 110 from being lowered below a predetermined height by magnetic force when the upper plate 110 is lowered to a predetermined height or less.

1104 The magnet may be installed in a direction in which a repulsive force is applied to the upper plate 110 and the base 120 .

1106 In this case, the magnet installed on the upper plate 110 and the base 120 to act as a repulsive force to each other may be a gap forming part.

[0115]

1111 If the gap forming part as described above has a structure capable of forming a gap G of a set height between the upper plate 110 and the base 120 when the upper plate 110 is lowered to the maximum, various structures are applicable.

[0116]

1117 It is preferable that the height-adjustable desk has a simple structure and a gap forming part capable of realizing a gap of a set height with high reliability.

[0117]

1122 In this embodiment, it is preferable that the pair of links (L1) (L2) itself have a structure that can form a gap of a set height between the upper plate 120 and the base 110, and the pair of links (L1) (L2) may have a structure bent at least once.

[0118]

1128 Each of the pair of links L1 and L2 may include a pair of link portions protruding from the gap forming portions 130A and 140A with a height difference in different

directions.

[0119]

1134 When the pair of link portions of the upper plate 110 is lowered to the maximum, one of the two may be positioned higher than the other, and the upper plate 110 does not come into contact with the base 120 due to this height difference, and the upper plate A gap of a set height may be formed between the 110 and the base 120 .

[0120]

1142 Each of the pair of links L1 and L2 has an obtuse angle with the gap forming portions 130A and 140A and the gap forming portions 130A and 140A and is hinged on either one of the base 120 and the upper plate 110 . a first link portion (130B) (140B) connected to and; The gap forming portions 130A and 140A and the second link portions 130C and 140C having an obtuse angle and provided with movable portions 169 and 144 guided to the other one of the base 120 and the upper plate 110 are included. can do.

[0121]

1152 Any one (L1) of the pair of links (L1) (L2) is a first link portion (130B) hingedly connected to an approximately front portion of the lower frame (121) by a hinge pin (130D), the upper frame (112) The moving part 169 guided along the second link part 130C hingedly connected by a hinge pin 169A, and a gap forming part 130A connecting the first link part 130B and the second link part 130C. may include

[0122]

1161 Any one (L1) of the pair of links (L1) and (L2) may be positioned higher than the first link part 130B when the second link part 130C is lowered to the maximum of the upper plate 110 .

1164 The upper plate 110 may not be lowered by the difference in height between the second link part 130B and the first link part 130B.

[0123]

1169 Any one (L1) of the pair of links (L1) and (L2) is a gap forming part 130A, and the first link part 130B and the second link part 130C are the first connection parts of the first embodiment of the present invention. It may function as the member 130 .

1172 In addition, the moving unit 169 hingedly connected to the second link unit 130C by a hinge pin 169A may function as the first moving unit 169 according to the first embodiment of the present invention.

[0124]

1178 The other one (L2) of the pair of links (L1) and (L2) includes a first link portion (140B) hingedly connected to a substantially front portion of the upper frame (112) by a hinge pin (140D), and the upper frame (112). The moving part 144 guided along the second link part 140C hingedly connected by a hinge pin 114A, and a gap forming part 140A connecting the first link part 140B and the second link part 140C. may include

[0125]

1187 The second link unit 140B may be positioned lower than the first link unit 140B when the other one of the pair of links L1 and L2 is lowered to the maximum of the upper plate 110 .

1190 The upper plate 110 may not be lowered by the difference in height between the second link unit 140B and the first link unit 140B.

[0126]

1195 The other one (L2) of the pair of links (L1) and (L2) is a gap forming part (140A), and the first link part (140B) and the second link part (140C) are the second connection parts of the first embodiment of the present invention. It may function as the member 140 .

1199 In addition, the moving unit 144 hingedly connected to the second link unit 140C by a hinge pin 144A may function as the second moving unit 144 according to the first embodiment of the present invention.

[0127]

1205 A rotation shaft through hole through which the rotation shaft 150 rotatably passes may be formed in the gap forming portions 130A and 140A, and the gap forming portions 130A and 140A are a pair of links L1 and L2. It may be a rotation shaft connecting portion to which the middle rotation shaft 150 is connected.

[0128]

1212 This embodiment may further include a height adjustment mechanism 180 to which the piston rod 182 is connected to any one of the pair of links (L1) and (L2).

1214 Since the height adjustment mechanism 180 of this embodiment has the same configuration and function as the height adjustment mechanism of the first embodiment of the present invention, a detailed description thereof will be omitted.

[0129]

1220 The height adjustment mechanism 180, the piston rod 182 may be rotatably connected to any one (L1) of the pair of links (L1) and (L2).

[0130]

1225 Piston rod 182 may be provided with a hinge shaft 182b connected to any one (L1) of the pair of links (L1) and (L2), the piston rod 182 is the hinge shaft (182b) as a center can be rotated.

[0131]

1231 The height adjustment mechanism 180 may be provided with a hinge shaft 184b at a lower portion, and the hinge shaft 184b may be hingedly connected to the other one (L2) of the pair of links (L1) and (L2).

1234 The hinge shaft 184b may be provided in the cylinder of the height adjustment mechanism 180, and the cylinder of the height adjustment mechanism 180 is to be rotated around the other one (L2) of the pair of links (L1) and (L2). can

[0132]

1240 In this embodiment, without the coupling shaft 155 as in the first embodiment of the present invention, the height adjustment mechanism 180 may be directly connected to the other one (L2) of the pair of link links (L1) and (L2).

1243 A hinge hole 140E through which the hinge shaft 184b is rotatably supported may be formed in the other one L2 of the pair of links L1 and L2.

[0133]

1248 The present embodiment includes an operation lever 295 rotatably connected to the upper plate 110; a cable (not shown) connected to the operation lever 295; It is connected to a cable (not shown) and the piston rod 182 may include a height adjustment mechanism 180 connected to one (L2) of the pair of links (L1) and (L2).

[0134]

1256 The operation lever 295 may be installed in place of the button portion 195 of the first embodiment of the present invention.

1258 The operation lever 295 may be installed on the upper plate 110 to rotate about a horizontal axis of rotation, and when the user holds the operation lever 295 and rotates it upward, the cable is operated to operate the height adjustment mechanism 180 . can

1262 The cable of the first embodiment of the present invention may be applied to the cable of the present embodiment, and the height adjusting mechanism 180 of the present embodiment may be applied to the height adjusting mechanism 180 of the first embodiment of the present invention.

1266 Since the cable and the height adjustment mechanism 180 are the same as those of the first embodiment of the present invention, a detailed description thereof will be omitted.

[0135]

1272 The upper plate 110 may be provided with a horizontal rotation shaft support 118 for rotatably supporting the horizontal rotation shaft.

1274 The horizontal rotation shaft support 118 may be provided on any one of the top plate 111 , the upper frame 112 , and the plate connector 114 .

[0136]

1279 On the other hand, the upper frame 112 of the upper plate 110 includes a hinge connection part 112A to which the other one (L2) of the pair of links (L1) and (L2) is hinge - connected, and a pair of links (L1) (L2). Any one (L1) of the guide portion (112B) to be guided may be formed together, for this purpose may be formed to be long in the front - rear direction.

1284 Here, the hinge connection portion 112A may have a configuration corresponding to the second coupling portion 145 of the first embodiment of the present invention, and the guide portion 112B corresponds to the first moving frame 165 of the first embodiment of the present invention. It may be a configuration that becomes

1288 The lower frame 112 of this embodiment can minimize the number of parts compared to the case in which the hinge connection part 112A and the guide part 112B are configured as separate members.

[0137]

1294 The lower frame 121 of the base 120 includes a hinge connection part 121A to which one (L1) of the pair of links (L1) and (L2) is hinged, and the other of the pair of links (L1) and (L2). The guide portion 121B through which one L2 is guided may be formed together, and for this purpose, it may be formed to be elongated in

the front - rear direction.

1299 Here, the hinge connection part 121A may have a configuration corresponding to the first coupling part 160 of the first embodiment of the present invention, and the guide part 121B may correspond to the second moving frame 170 of the first embodiment of the present invention. It may be a configuration that becomes

1303 In the lower frame 121 of this embodiment, the number of parts can be minimized compared to when the hinge connection part 121A and the guide part 121B are configured as separate members.

[0138]

1309 The operation of this embodiment will be described as follows.

[0139]

1313 First, the user may hold the operation lever 295 by hand and raise it upward, and the operation lever 295 may be rotated upwardly around the horizontal rotation shaft supported by the horizontal rotation shaft support part 118 .

1316 When the operation lever 295 is rotated, the cable connected to the operation lever 295 may transmit an external force to the height adjustment mechanism 180 , and the pressure of the gas may act on the piston rod 182 inside the height adjustment mechanism 180 . In addition, the height adjustment mechanism 180 may be advanced in a direction in which the piston rod 182 raises the upper plate 110 .

[0140]

1324 As described above, when the upper plate 110 is lifted, the moving part 169 of the first link L1 may move in the forward direction of the upper frame 112 along the upper frame 112 , and the first The link L1 may be gradually erected in an upward direction based on the hinge connection part 121A of the lower frame 121 .

[0141]

1331 And, when the upper plate 110 is lifted, the moving part 144 of the second link L2 may move in the forward direction of the lower frame 121 along the lower frame 121, and the second link (L2) may be gradually erected while rotating around the hinge connection portion 112A of the upper frame 112.

[0142]

1338 When the first link (L1) and the second link (L2) are rotated as described above, the first link (L1) and the second link (L2) are formed between the gap forming

portion 130A of the first link (L1) and the second link (L1). The gap forming part 140B of the link L2 can be unfolded in a state connected to the rotation shaft 150, and the upper plate 110 is supported by the first link L1 and the second link L2 in an upward direction. can be raised to

[0143]

1347 When the upper plate 110 is raised as described above, the first link portion 140B of the second link L2 may be raised higher than the first link portion 130B of the first link L1, and the first link The second link portion 130C of the (L2) may be raised higher than the second link portion 140C of the second link L2.

[0144]

1354 When the angle between the first link portion 140B of the second link L2 and the first link portion 130B of the first link L1 increases, the second link portion 130C of the first link L2) and the second link portion 140C of the second link L2 may increase in angle, and the height of the upper plate 110 may increase.

[0145]

1361 Meanwhile, when the top plate 110 reaches a desired height, the user can remove the external force applied to the operation lever 295 without lifting the top plate 110 any more.

1364 The operation lever 295 may be rotated in a downward direction about a horizontal rotation axis as the external force is removed.

1366 When the operation lever 295 is rotated in the downward direction, the external force acting on the cable is released, and the position of the piston rod 182 is fixed.

[0146]

1371 When the position of the piston rod 182 is fixed, the height adjustment mechanism 180 may be supported by the hinge - connected link L2 among the first link L1 and the second link L2, and the piston rod 182 is the upper plate. By supporting the 110, the upper plate 110 can be prevented from being arbitrarily descended.

[0147]

1378 As shown in FIG. 17 , the user may use a desk whose height is adjustable while the top plate 110 is raised and fixed.

[0148]

1383 When the user wants to lower the height of the upper plate 110 , the user can hold the operation lever 295 by hand and raise it upward again, and the operation lever 295 centers on the horizontal rotation shaft supported by the horizontal rotation shaft support part 118 . can be rotated upward.

1387 When the operation lever 295 is rotated, the cable connected to the operation lever 295 may transmit an external force to the height adjustment mechanism 180 , and the pressure of the gas may act on the piston rod 182 inside the height adjustment mechanism 180 . In addition, the height adjustment mechanism 180 may be in a state in which the piston rod 182 can move in a straight line in a direction for lowering the upper plate 110 .

[0149]

1396 As described above, the user can lower the upper plate 110 in a state in which the operation lever 295 is rotated in the upward direction, and the piston rod 182 of the height adjustment mechanism 180 is directed toward the inside of the height adjustment mechanism 180 . direction can be reversed.

[0150]

1403 As described above, when the upper plate 110 is lowered, the moving part 169 of the first link L1 may be moved in the rear direction of the upper frame 112 along the upper frame 112, and the first link (L1) may be rotated in the lower direction around the hinge connection portion 121A of the lower frame 121.

[0151]

1410 And, when the upper plate 110 is lowered, the moving part 144 of the second link L2 may move in the rear direction of the lower frame 121 along the lower frame 121, and the second link L2) may be rotated in the lower direction with respect to the hinge connection portion 112A of the upper frame 112 .

[0152]

1417 When the first link (L1) and the second link (L2) are rotated as described above, the first link (L1) and the second link (L2) are formed between the gap forming portion 130A of the first link (L1) and the second link (L1). The gap forming portion 140B of the link L2 may be folded in a state connected to the rotation shaft 150, and the upper plate 110 is lowered in a state supported by the first link L1 and the second link L2. direction can be lowered.

[0153]

1426 When the upper plate 110 is lowered as described above, the first link portion 140B of the second link L2 may descend in proximity to the first link portion 130B of the first link L1, and the first The second link portion 130C of the link L2 may be lowered adjacent to the second link portion 140C of the second link L2.

[0154]

1433 When the angle between the first link portion 140B of the second link (L2) and the first link portion 130B of the first link (L1) decreases, the second link portion (130C) and the second link portion 140C of the second link L2 may decrease in angle, and the height of the upper plate 110 may be reduced.

[0155]

1440 When the upper plate 110 is lowered as described above, the first link L1 and the second link L2 are formed by the bending structure of the first link part, the gap forming part, and the second link part. It can be stopped at a position where a gap (G) of a set height is formed between the base 120 and the base 120, and the upper plate 110 can be lowered only to a position where a gap (G) of a set height is formed with the base 120. there is.

1446 When a gap G of a set height is formed between the top plate 110 and the base 120 , it is possible to prevent the user's fingers from being caught between the top plate 110 and the base 120 , and the top plate 110 and A safety accident in which a user's finger is caught between the base 120 can be prevented.

[0156]

1453 On the other hand, the user can remove the external force applied to the operation lever 295 when the upper plate 110 is lowered to a height forming a gap G of the base 120 and the set height, and is no longer lowered.

1456 The operation lever 295 may be rotated in a downward direction about a horizontal rotation axis as the external force is removed.

1458 When the operation lever 295 rotates in the downward direction, the external force acting on the cable is released, the position of the piston rod 182 is fixed, and the upper plate 110 is set with the base 120 as shown in FIG. 18 . Position can be fixed at a height that forms a gap (G) in height.

[0157]

1465 19 is a cross - sectional view when the upper plate according to the sixth

embodiment of the present invention is limited to rise by the stopper, and FIG. 20 is a cross - sectional view when the upper plate according to the sixth embodiment of the present invention is lowered by the stopper.

[0158]

1472 In the present embodiment, a stopper 500 on which one of the pair of links L1 and L2 is caught may be installed on the lower frame 121 .

1474 The stopper 500 may be variably installed on one of the moving paths (P1 to P2) of the pair of links L1 and L2.

1476 In this embodiment, the configuration and operation other than the stopper 500 are the same as or similar to any one of the first to fifth embodiments of the present invention, and detailed description thereof will be omitted.

1479 For convenience, the same reference numerals as in the fifth embodiment are used for the same components as in the fifth embodiment, and a detailed description thereof will be omitted.

[0159]

1485 When the stopper 500 is not installed, one moving part 144 of the pair of links L1 and L2 may be guided back and forth along the moving path (P1 to P2) of the lower frame 121. .

[0160]

1491 When the stopper 500 is not installed, the moving part 144 is the most forward position (P1), which is a position that is maximally advanced in the forward direction (F), and a rearmost position (P2) that is a position where it is maximally retracted in the rear direction (R).) can be moved to

[0161]

1498 The stopper 500 is a lower frame to be restrained before the moving part 144 is reached to the forwardmost position P1, as shown in FIG. 19, when the moving part 144 is advanced toward the forwardmost position P1. It may be installed at 121 , and the moving part 144 , which was advanced toward the most forward position P1 , is caught in the forward direction F by the stopper 500 and may not be able to advance forward any longer.

[0162]

1507 On the contrary, when the moving part 144 is retracted toward the rearmost

position P2, the stopper 500, as shown in FIG. 20, before the moving part 144 reaches the rearmost position P2. It can be installed in the lower frame 121 to be constrained, and the moving part 144, which was retracted toward the rearmost position P2, is caught in the rear direction R by the stopper 500 and can no longer be retracted in the rear direction. there is.

[0163]

1516 The stopper 500 may be installed at the front and rear of the moving unit 144 in the moving direction of the moving unit 144 , and may vary the actual moving path of the moving unit 144 according to the installation position thereof.

[0164]

1522 The movable path of the moving unit 144 is between the most forward position (P1) and the rearmost position (P2), and the stopper 500 is moved to a position that is rearward than the forward position (P1) as shown in FIG. 19. When installed to be positioned more forward, the actual movable path of the moving unit 144 may be between the rear end of the stopper 500 (P3) and the rearmost position (P2), and the stopper 500 is shown in FIG. 20 . As such, when installed to be positioned rearward than the moving unit 144 at a position in front of the rearmost position P2, the actual moving path of the moving unit 144 is the tip of the stopper 500, the position P4 and It may be between the most forward positions P1.

[0165]

1534 The height - adjustable desk can limit the maximum rise height of the top plate 110 by the stopper 500 to a lower level than when the stopper 500 is not installed, and the maximum descending height of the top plate 110 can be reduced by the stopper 500. If it is not installed, it can be limited higher than that.

[0166]

1541 On the other hand, the stopper 500 can prevent the moving unit 144 from sliding along the lower frame 121 by restricting the moving unit 144 , and a desk adjustable in height together with the height adjustment mechanism 180 . It can function to maintain the height.

[0167]

1548 The stopper 500 preferably has a structure that can easily change its installation position, and preferably has a structure that is easy to hold by hand from the

outside of the base 120 .

[0168]

1554 The stopper 500 may include a moving part contact member 502 positioned on the moving path (from P1 to P2) of the moving unit 144 to contact the moving unit 144 and constrain the moving unit 144 . .

1557 The stopper 500 may further include a handle member 504 that can be turned by a user's hand.

1559 The handle member 504 may be detachably coupled to the moving unit contact member 502 , and may be coupled to the moving unit contact member 502 to be positioned outside the lower frame 121 .

1562 The stopper 500 may further include a connection member 506 connecting the handle member 504 and the moving part contact member 502 .

1564 The connection member 506 may be mounted to protrude on any one of the handle member 504 and the moving part contact member 502 or may be formed to protrude integrally, and in this case, the handle member 504 and the moving part contact member 502), at least a portion of the connecting member 506 may be interpolated in the other one of the connecting member coupling hole may be formed.

1570 The connecting member 506 may be coupled by being fitted into the connecting member coupling hole, and of course it is also possible to be screwed.

[0169]

1575 The connection member 506 may be disposed to protrude in a horizontal direction from any one of the handle member 504 and the moving part contact member 502 .

[0170]

1580 Meanwhile, a slit 121C through which the connecting member 506 may pass may be formed in the lower frame 121 .

1582 The slit 121C may be elongated in the front - rear direction on the lower frame 121, and the connecting member 506 is located at a predetermined position between the front end 121D of the slit 121C and the rear end 121E of the slit 121C. can be located.

[0171]

1589 21 is a rear perspective view of a desk adjustable in height according to a seventh embodiment of the present invention, and FIG. 22 is an enlarged perspective view of a leveling unit according to the seventh embodiment of the present invention.

[0172]

1595 The height - adjustable desk of this embodiment includes a base 120; top plate 110 and; It is disposed between the base 120 and the upper plate 110 and may include a link mechanism L for supporting the upper plate 110 to be lifted and lowered, and the link mechanism L is one of the base 120 and the upper plate 110 . While being hinged to any one and guided to the other one of the base 120 and the upper plate 110, the upper plate 110 is raised and lowered, and the left and right links spaced apart in the left and right directions, and the upper plate 110 while maintaining the horizontal The left link and the right link may include a horizontal maintaining unit 600 connected to be operated while maintaining parallel to each other so as to be lifted.

[0173]

1608 In this embodiment, the configuration other than the leveling unit 600 may be the same as or similar to one of the first to sixth embodiments of the present invention, and the same reference numerals are used for the same components, and detailed descriptions thereof are omit

1612 For convenience, the same reference numerals as in the fifth and sixth embodiments are used for the same components as in the fifth and sixth embodiments, and detailed description thereof is omitted.

[0174]

1618 Each of the left link and the right link includes a connecting member 140 hingedly connected to any one of the base 120 and the upper plate 110 , and is rotatably connected to the connecting member 140 so as to be between the base 120 and the upper plate 110 . It may include a moving unit 144 guided to the other.

[0175]

1625 The left link of the present embodiment may be a link located on the left side of the pair of second links L2 of the fifth embodiment of the present invention. L21 is used for explanation.

[0176]

1631 The right link in this embodiment may be a link located on the right side of the pair of second links L2 in the fifth embodiment of the present invention. L22 is used for explanation.

[0177]

1637 The horizontal maintaining unit 600 may include a moving unit 144 and a parallel shaft 610 connected by a coupler 602 .

1639 The parallel axis 610 may be positioned elongated in the horizontal direction between the left link L21 and the right link L22.

1641 The parallel axis 610 may be formed to be shorter than the distance between the lower end of the left link L21 and the lower end of the right link L22.

1643 The coupler 602 may include a left coupler connected to the left side of the parallel shaft 610 and a right coupler connected to the right side of the parallel shaft 610 .

1645 The parallel shaft 610 may be a moving part connector connecting the moving part 144 of the left link L21 and the moving part 144 of the right link L22, and the moving part 144 of the left link L21.) and the moving part 144 of the right link (L22) while rotating together with the moving part 144 of the left link (L21) and the moving part 144 of the right link (L22) while rotating faster than the other one guidance can be prevented.

[0178]

1654 The left end of the parallel shaft 610 may be connected to the left coupler located on the right side of the left link L21, and the right end of the parallel axis 610 may be connected to the right coupler located on the left side of the right link L22. there is.

1658 The height - adjustable desk may be in the order of a left link L21, a left coupler, a parallel shaft 610, a right coupler, and a right link L22 in the left and right directions.

[0179]

1664 A rotation shaft 149A may protrude from the moving part 144 of the left link L21 and the moving part 144 of the right link L22.

[0180]

1669 The rotation shaft 149A protruding from the moving part 144 of the left link L21 passes through the connecting member 140 of the left link L21 and may be connected to the left coupler, and the moving part of the right link L22 (The rotation shaft 149A protruding from the 144 may pass through the connecting member 140 of the right link L22 and be connected to the right coupler.

[0181]

1677 When any one of the moving part 144 of the left link L21 and the moving part 144 of the right link L22 is rotated, the moving part 144 of the left link L21 and the moving part of the right link L22 are rotated. 144 may be integrally rotated by the coupler 602 and the parallel shaft 610, the moving part 144 of the left link (L21) and the moving part 144 of the right link (L22) at the same speed can be induced to rotate.

[0182]

1686 When the moving part 144 of the left link L21 and the moving part 144 of the right link L22 rotate at different speeds, the moving part 144 of the left link L21 and the moving part 144 of the right link L22 The positions of the moving parts 144 in the front and rear directions may be different from each other, and in this case, the upper plate 110 may be inclined while being eccentrically inclined to one side of the left and right.

[0183]

1695 Meanwhile, as described above, when the moving part 144 of the left link L21 and the moving part 144 of the right link L22 are integrally rotated at the same speed by the parallel shaft 610, the upper plate 110 is It can be raised and lowered while maintaining the overall level.

[0184]

1702 The leveling unit 600 may include a link connector 142 connected to the left link L21 and the right link L22, respectively.

1704 The link connector 142 may connect the connecting member of the left link L21 and the connecting member of the right link L22 so that the left link L21 and the right link L22 are operated integrally.

[0185]

1710 The leveling unit 600 may include a pinion gear 149B coupled to rotate together with the moving unit 144 , and a rack gear 121F meshed with the pinion gear 149B to move in the front - rear direction.

1713 Here, in the coupler 602, a buffer unit for preventing the rotation of the pinion gear, for example, a buffer means filled with oil, etc. may be provided, and through this, the movement or flow of the moving unit is controlled within a certain level. be able to stop

1717 Due to this, the upper plate can be supported more stably.

[0186]

1721 The rack gear 121F may be formed on the base 120 or the upper plate 110 to which the moving part 144 is guided.

[0187]

1726 The rack gear 121F may be formed to be elongated in the front - rear direction on the lower frame 121 , and the moving part 144 may be positioned to rotate in the front - rear direction along the rack gear 121F inside the lower frame 121 . .

1729 The pinion gear 149B and the rack gear 121F can prevent the moving part 144 from being twisted in the lateral direction when the moving part 144 rotates, and the moving part 144 advances and retreats only in the front - rear direction while shaking is minimized. can be

[0188]

1736 When the moving part 144 is rotated along the rack gear 121F, the pinion gear 149B and the rack gear 121F prevent the moving part 144 from being twisted in the lateral direction while the moving part 144 is more smoothly It can help rotate.

1739 The upper plate 110 may be smoothly raised and lowered as a whole.

[0189]

1743 The horizontal maintaining unit 600 is capable of maintaining the horizontal axis of the upper plate 110 by the parallel shaft 610 alone without the link connector 142, the pinion gear 149B and the rack gear 121F.

[0190]

1749 The horizontal maintaining unit 600 is composed of a combination of a parallel shaft 610 , a pinion gear 149B and a rack gear 121F without the link connector 142 , so that it is possible to maintain the horizontal of the upper plate 110 .

1752 In this case, the upper plate 110 can be moved up and down while maintaining a more stable level without shaking.

[0191]

1757 The horizontal maintaining unit 600 is capable of maintaining the horizontal axis of the upper plate 110 by the link connector 142 alone, without the parallel shaft 610 , the pinion gear 149B and the rack gear 121F.

[0192]

1763 The horizontal maintaining unit 600 is composed of a combination of the link connector 142 , the pinion gear 149B and the rack gear 121F without the parallel shaft 610 , thereby maintaining the horizontal of the upper plate 110 .

1766 In this case, the upper plate 110 can be moved up and down while maintaining a more stable level without shaking.

[0193]

1771 The horizontal maintaining unit 600 is composed of a combination of a parallel shaft 610 and a link connector 142 , a link connector 142 , a pinion gear 149B and a rack gear 121F to maintain the horizontal of the upper plate 110 . it is possible to do

1774 In this case, the upper plate 110 can be moved up and down while maintaining the most stable level.

[0194]

1779 23 is a perspective view illustrating a height - adjustable desk according to an eighth embodiment of the present invention.

[0195]

1784 The present embodiment includes a base 120; top plate 110 and; It is disposed between the base 120 and the upper plate 110 and includes a link mechanism L for supporting the upper plate 110 to be lifted and lowered, and the link mechanism L is front and rear between the base 120 and the upper plate 110 . It includes a pair of links (L3) and (L4) spaced apart in the direction and disposed parallel to each other.

1790 The present embodiment may further include a height adjustment mechanism 180 connected to the base 120 rotatably and the piston rod 182 is connected to one of the pair of links (L3) and (L4).

[0196]

1796 This embodiment may include a left pair of links between the left side of the base 120 and the left side of the upper plate 110 , and a left height adjustment mechanism in which a piston rod is connected to any one of the left pair of links.

1799 This embodiment may include a pair of links on the right between the right side of the base 120 and the right side of the upper plate 110, and a right height adjustment mechanism in which a piston rod is connected to any one of the right

pair of links. may include

[0197]

1806 A pair of links (L3) (L4) and the height adjustment mechanism 180 may be disposed to be spaced apart in the left and right direction between the two sets of the base 120 and the upper plate 110 .

[0198]

1812 The base 120 may include a lower frame.

1813 The base 120 may include a left lower frame and a right lower frame, and the left lower frame and the right lower frame may be connected to the frame connector 123 .

[0199]

1819 Each of the lower left frame and the lower right frame may be disposed elongated in the front - rear direction, and may be disposed parallel to each other.

1821 The lower left frame and the lower right frame are symmetrical structures left and right, and the same configuration will be referred to as a lower frame and will be described below.

[0200]

1827 The lower frame includes a lower plate portion 121G elongated in the front - rear direction, a lower connection portion 121J to which each of a pair of links L3 and L4 are connected, and a height adjustment mechanism connection portion 121K to which the height adjustment mechanism 180 is hinged.) may be included.

[0201]

1834 The lower connection part 121J may be vertically bent at the front part of the lower plate part 121G.

1836 In addition, the height adjustment mechanism connecting portion 121K may be bent vertically to the rear portion of the lower plate portion 121G or the frame connector 123 .

[0202]

1842 The upper plate 110 may include an upper frame.

1843 The upper frame may be installed to be disposed under the top plate 111 of the top

plate 110 .

1845 The upper frame may include an upper connection portion 112G to which each of the pair of links L3 and L4 is connected.

[0203]

1850 The pair of links L3 and L4 may be connected to the lower connecting portion 121J to be spaced apart from each other.

1852 The pair of links (L3) and (L4) may be rotatably connected to the lower connecting portion 121J with respect to different hinge axes.

1854 An upper portion of the pair of links L3 and L4 may be connected to the upper connection part 112G.

1856 The pair of links (L3) and (L4) may be rotatably connected to the upper connection part (112G) with respect to hinge shafts different from each other.

[0204]

1861 The pair of links L3 and L4 may guide the upper plate 110 while rotating at the same inclination along the upper plate 110 when the upper plate 110 is lifted.

[0205]

1866 The height adjustment mechanism 180 may be hinge - connected to the lower portion of the height adjustment mechanism connection portion 121K, and the piston rod 182 may be hinge - connected to one of the pair of links L3 and L4.

1869 The height adjustment mechanism 180 is disposed to be inclined in a direction substantially toward the front upper side when the upper plate 110 is raised, and the piston rod 182 may be advanced in a direction toward one of the pair of links L3 and L4. .

[0206]

1876 The height adjustment mechanism 180 can be retracted in a direction in which the piston rod 182 is inserted into the interior of the height adjustment mechanism 180 while the piston rod 182 is arranged in an approximately horizontal direction when the upper plate 110 is lowered. .

[0207]

1883 In this embodiment, as in the fifth embodiment of the present invention, when the operation lever 295 is operated, the height adjustment mechanism 180 is operated while maintaining the position of the upper plate 110 .

[0208]

1889 24 is a perspective view showing a height - adjustable desk according to a ninth embodiment of the present invention.

[0209]

1894 In this embodiment, the link mechanism (L) may be the same as that of the eighth embodiment of the present invention, and the height adjustment mechanism (189) is rotatably connected to the upper plate (110) and a pair of links (L3) (L4) The piston rod 182 is connected to one, and the configuration and action other than the connection target of the height adjustment mechanism 180 are the same as or similar to those of the eighth embodiment of the present invention, so the same reference numerals are used, and detailed description thereof is omitted. do.

[0210]

1904 In this embodiment, a structure in which the height adjustment mechanism 180 is hinged may be provided on the upper plate 110 .

1906 A height adjustment mechanism connecting portion 112K to which the height adjustment mechanism 180 is hinged may be installed on the upper plate 110 .

[0211]

1911 The height adjustment mechanism 180 is disposed inclined in a direction substantially toward the rear lower side when the upper plate 110 is raised, and the piston rod 182 may protrude in a direction toward one of the pair of links L3 and L4. .

[0212]

1918 The height adjustment mechanism 180 can be moved in a direction in which the piston rod 182 is inserted into the interior of the height adjustment mechanism 180 while the piston rod 182 is disposed in an approximately horizontal direction when the upper plate 110 is lowered. .

[0213]

1925 In this embodiment, as in the fifth embodiment of the present invention, when the operation lever 295 is operated, the height adjustment mechanism 180 is operated while maintaining the position of the upper plate 110 .

[0214]

1931 25 is a perspective view illustrating a height - adjustable desk according to a tenth embodiment of the present invention.

[0215]

1936 In this embodiment, the link mechanism (L) may be the same as that of the eighth embodiment of the present invention, and the height adjustment mechanism (189) is the height adjustment mechanism (180) to any one of the pair of links (L3) (L4) Rotatably connected, the piston rod 182 is connected to the other one of the pair of links (L3) and (L4), other configurations and actions other than the connection target of the height adjustment mechanism 180 are eighth embodiment of the present invention Since they are the same as or similar to the examples, the same reference numerals are used, and detailed descriptions thereof are omitted.

[0216]

1947 The height adjustment mechanism 180 may be hingedly connected to any one of the pair of links (L3) and (L4), and the piston rod 182 may be hinged to the other of the pair of links (L3) and (L4). .

[0217]

1953 The height adjustment mechanism 180 may be disposed elongated in a direction substantially upward while rising together with any one of the pair of links L3 and L4 when the upper plate 110 is raised, and at this time, the piston rod 182 is It may be advanced in a direction toward the other one of the pair of links (L3) and (L4).

[0218]

1960 The height adjustment mechanism 180 is disposed in an approximately horizontal direction together with any one of a pair of links L3 and L4 when the upper plate 110 is lowered while the piston rod 182 is inside the height adjustment mechanism 180 . It can be retracted in the direction of insertion.

[0219]

1967 In this embodiment, as in the fifth embodiment of the present invention, when the operation lever 295 is operated, the height adjusting mechanism 180 is operated while maintaining the position of the upper plate 110 .

[0220]

1973 26 is a perspective view illustrating a height - adjustable desk according to an eleventh embodiment of the present invention.

[0221]

1978 The height - adjustable desk of this embodiment may further include a fixed leg 200 supporting the base 120 .

1980 The base 120 may be installed to be mounted on the upper side of the fixed leg 200 , and may be fixed to the fixed leg 200 .

[0222]

1985 The base 120 may be positioned to be spaced apart from the ground by the fixing legs 200 .

1987 The base 120 may be fixed to the fixing leg 200 by a fastening member such as a screw or a hook portion such as a hook.

[0223]

1992 The fixed leg 200 may be a part of a height - adjustable desk, and may function as a lower frame or a leg.

1994 In this embodiment, the fixed leg 200 may constitute a height - adjustable desk together with the base 120, the upper plate 110 and the link mechanism L, and in this case, the height - adjustable desk may be a kind of table desk. there is.

[0224]

2000 27 is a perspective view when the top plate of the desk adjustable in height according to the twelfth embodiment of the present invention is raised, and FIG. 28 is a perspective view when the top plate of the desk adjustable in height according to the twelfth embodiment of the present invention is lowered.

[0225]

2007 The height - adjustable desk 100 of this embodiment can be used as a dining table.

2008 The height - adjustable desk 100 is installed on the lower side of the upper plate 110 to cover the left safety cover 710 covering the left side of the link mechanism L, and the right side covering the right side of the link mechanism L on the lower side of the upper plate 110 . It may further include a safety cover 720 .

[0226]

2015 The upper end of each of the left safety cover 710 and the right safety cover 720 may be fixed to the upper plate 110 by a fastening member such as a screw or a hook such as a hook.

[0227]

2021 The height of each of the left safety cover 710 and the right safety cover 720 may be formed to be higher than the height of the link mechanism L when the link mechanism L is fully unfolded.

2024 Each of the left safety cover 710 and the right safety cover 720 may be formed at a height that covers the side of the boundary between the base 120 and the fixed leg 200 .

[0228]

2030 The left safety cover 710 and the right safety cover 720 may be lowered together with the upper plate 110 when the upper plate 110 is lowered.

[0229]

2035 The left safety cover 710 can prevent a user's hand such as an infant from entering between the pair of links on the left side of the left safety cover 710, and the right safety cover 720 is a right safety cover (720) can be prevented from entering between the pair of links on the right side, and the safety of the height - adjustable desk 100 can be improved.

[0230]

2043 In this embodiment, the base 120, the upper plate 110, the link mechanism (L), etc. other configurations and actions are the same as or similar to any one of the fifth to tenth embodiments of the present invention, so the same reference numerals are used. A detailed description thereof will be omitted.

[0231]

2050 29 is a perspective view showing a height - adjustable desk according to a thirteenth embodiment of the present invention, and FIG. 30 is a side view showing a height - adjustable desk according to a thirteenth embodiment of the present invention.

[0232]

2056 The height-adjustable desk 100 includes a fixed leg 200; Base 120 disposed on the upper side of the fixed leg 200; The base 120 and the upper plate 110 and spaced apart; It may include a link mechanism (L) connected to the base 120 and the upper plate 110 to support the upper plate 110 in an elevating manner, and the upper plate 110 includes a top plate 111; It may include an auxiliary support 113 ' disposed above the top plate 111 and having a size smaller than that of the top plate 111 .

[0233]

2066 The auxiliary support 113 ' may include a plurality of vertical plates 113A and a horizontal plate 113B disposed in parallel with the top plate 111 on the upper side of the plurality of vertical plates 113A.

[0234]

2072 The user can put the monitor (M) or various books on the upper side of the auxiliary pedestal 130', and the user can set the height of the top plate 110 so that the user can look at the monitor at the most ideal angle, for example, a comfortable angle for the neck. can be adjusted

[0235]

2079 Referring to FIG. 30 , the downward inclination angle from the user's eye (E) to the center of the monitor (M) may be 20 to 30 degrees in the downward direction of the eye (E). By adjusting the height, the height of the monitor (M) can be adjusted, and the angle (X) at which the eyes (E) gaze at the monitor (M) can be varied more variously than when the user only adjusts the height of the seat on which the user sits. .

[0236]

2088 Meanwhile, in the thirteenth embodiment shown in FIGS. 29 and 30 , the top plate 111 and the auxiliary pedestal 113 ' are not necessarily limited to the illustrated shapes and may have any shape.

2091 FIG. 31 shows a form in which the top plate and the auxiliary pedestal in the thirteenth embodiment are replaced with those of the embodiment shown in FIG. 16 .

2094 Accordingly, in the example shown in FIG. 31, the remaining components except for the top plate and the auxiliary pedestal are basically the same as those of the

thirteenth embodiment.

[0237]

2100 As shown, the top plate has a concave portion 113A formed on the front side.

2101 The concave portion 113A is a portion opposite to the user's stomach, thereby allowing the user to more closely approach the auxiliary pedestal on which the monitor or the like can be mounted.

2104 In addition, wing portions 113B are disposed on both sides of the top plate.

2105 The wing portion 113B expands the receiving space provided by the top plate to the left and right, and is disposed to be spaced apart from the top plate at a predetermined distance.

[0238]

2111 The gap may provide a space through which a link mechanism or a frame may pass, thereby further reducing the minimum height of the desk.

[0239]

2116 The auxiliary pedestal has an approximately 'C' shape in a plan view.

2117 For this reason, both end portions 111A of the auxiliary pedestal have a protruding shape toward the front portion of the top plate, and the protruding portion covers the gap between the top plate and the wing portion to have a more beautiful appearance. It also serves to expand the storage space of the auxiliary pedestal.

[0240]

2124 Although the height-adjustable desk according to the first to thirteenth embodiments has been described above, those skilled in the art can properly combine the first to thirteenth embodiments, and such a combination also falls within the protection scope of the present invention.

[0241]

2131 110: Top plate 112: Upper frame 120: Base 121: Lower frame 130, 140: Connection member 130A, 140A: Gap forming part 130B, 140B: First link part 130C, 140C: Second link part 144: Moving part 169: Moving part 180: Height Control mechanism 182: Piston rod 295: Operation lever 500: Stopper L: Link mechanism L1, L2: Link

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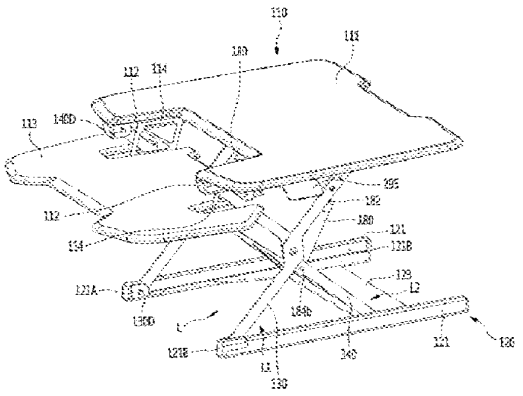
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(54) 발명의 명칭 **높낮이 조절 가능한 책상**

(57) 요 약

본 발명은 높낮이 조절 가능한 책상을 개시한다. 본 발명은, 베이스와, 상기 베이스에 대해서 높이가 가변되는 상판과, 상기 베이스와 상기 상판을 연결하는 제1 연결부재와, 상기 베이스와 상기 상판을 연결하고, 상기 제1 연결부재와 교차하여 회전축을 형성하는 제2 연결부재와, 상기 제1 연결부재 및 상기 제2 연결부재 중 어느 하나에 상기 회전축에서 이격되어 연결되는 실린더, 및 상기 제1 연결부재 및 상기 제2 연결부재 중 다른 하나에 연결되고, 상기 실린더에 삽입되며 상기 상판을 향하도록 배치된 피스톤 로드를 포함한다.

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명 세 서

청구범위

청구항 1

베이스;

상기 베이스에 대해서 높이가 조절 가능한 상판;

상기 베이스와 상기 상판을 연결하고, 일단이 상기 상판에 슬라이딩하도록 설치되는 제1 연결부재;

상기 베이스와 상기 상판을 연결하고, 상기 제1 연결부재와 교차하여 회전축을 형성하고, 일단이 상기 베이스에 슬라이딩하도록 설치되는 제2 연결부재;

상기 제1 연결부재 및 상기 제2 연결부재 중 어느 하나에 상기 회전축에서 이격되어 연결되는 실린더;

상기 제1 연결부재 및 상기 제2 연결부재 중 다른 하나에 연결되고, 상기 실린더에 삽입되며 상기 상판을 향하도록 배치된 피스톤 로드;

상기 피스톤 로드의 상측에 배치되어 상기 실린더에 저장된 내부 가스를 선택적으로 개폐하는 개폐 핀;

상기 개폐 핀을 동작시키기 위한 개폐 가이드;

상기 개폐 가이드에 연결되는 케이블;

상기 상판에 회전 가능하게 설치되고, 상기 케이블에 연결되는 조작 레버;

서로 마주보는 한 쌍의 상기 제2 연결부재를 연결하여, 상기 회전축을 따라 연장되는 제1 링크 커넥터;

상기 베이스에 슬라이딩하는 상기 제2 연결부재의 단부와 상기 회전축 사이에 배치되어, 서로 마주보는 한 쌍의 상기 제2 연결부재를 연결하는 제2 링크 커넥터;

상기 상판에 슬라이딩하는 제1 연결부재의 단부와 상기 회전축 사이에 배치되어, 서로 마주보는 한 쌍의 상기 제1 연결부재의 단부를 연결하는 제3 링크 커넥터;

상기 상판의 하면에 설치되며, 상기 제1 연결부재의 슬라이딩하는 일단과 결합되고, ㄷ 형상을 가지는 상부 프레임; 및

상기 베이스의 상면에 설치되며, 상기 제2 연결부재의 슬라이딩하는 일단과 결합되고, ㄷ 형상을 가지는 하부 프레임;를 포함하고,

상기 조작 레버에 외력이 가해져서 회전하여 상기 케이블이 당겨지면, 상기 내부 가스의 이동으로 상기 피스톤 로드의 위치가 조절되어, 상기 제1 연결부재의 일단과 상기 제2 연결부재의 일단은 슬라이딩하고,

상기 조작 레버에 가해진 외력이 제거되어 상기 케이블에 당겨지는 힘이 해제되면, 상기 피스톤 로드의 위치가 고정되며, 상기 제1 연결부재의 일단과 상기 제2 연결부재의 일단은 상기 상판의 상사높이에 대응하는 상사지점과 상기 상판의 하사높이에 대응하는 하사지점 사이의 임의의 위치에 고정되며,

상기 제1 연결부재 및 상기 제2 연결부재 중 어느 하나는

상기 실린더와 연결되는 부분에서 외측으로 돌출되어 양단부보다 폭 두꺼운 돌출부분을 가지고,

상기 상판이 상기 하사높이에 위치 시에 상기 돌출부분이 상기 베이스를 향하여 아래로 돌출되도록 배치되되, 상기 베이스에서 이격되는, 높낮이 조절 가능한 책상.

청구항 2

제1 항에 있어서,

상기 피스톤 로드 및 상기 실린더의 중공은

상기 상판이 승강 또는 하강 시에 상기 상판을 향하면서 이동하는, 높낮이 조절 가능한 책상.

청구항 3

제1 항에 있어서,

상기 제1 연결부재와 상기 제2 연결부재가 교차되는 위치에 교차하여 회전축을 형성하고,

상기 실린더의 단부는 상기 회전축에서 제1 거리로 이격되어 설치되고, 상기 피스톤 로드는 상기 회전축에서 상기 제1 거리와 다른 제2 거리로 이격되어 설치되는, 높낮이 조절 가능한 책상.

청구항 4

제3 항에 있어서,

상기 피스톤 로드의 단부는

상기 상판에 슬라이딩되는 상기 제1 연결부재 또는 상기 제2 연결부재의 단부에 설치되는, 높낮이 조절 가능한 책상.

청구항 5

제1 항에 있어서,

상기 실린더 및 상기 피스톤 로드는

상기 베이스에 대해서 경사각을 가지며, 상기 경사각은 5도 보다 크고, 70도 보다 작은, 높낮이 조절 가능한 책상.

청구항 6

제1 항에 있어서,

상기 상판이 승강 또는 하강시에 상기 제1 연결부재, 상기 제2 연결부재, 상기 실린더 및 상기 피스톤 로드가 삼각형을 유지하는, 높낮이 조절 가능한 책상.

청구항 7

제1 항에 있어서,

상기 제1 연결부재 또는 상기 제2 연결부재는 절곡 형성된 틈 형성부;를 구비하는, 높낮이 조절 가능한 책상.

청구항 8

삭제

청구항 9

삭제

청구항 10

삭제

청구항 11

삭제

발명의 설명

기 술 분 야

[0001] 본 발명은 높낮이 조절 가능한 책상에 관한 것이다.

배 경 기 술

[0002] 회사나 학교 등에는 사람이 앉을 수 있는 의자와 함께, 컴퓨터와 책을 놓고 업무 또는 교육을 수행하기에 편리하도록 책상이 구비되어 있다. 이와 같은 기존의 책상들은 높이가 획일적으로 일정하게 만들어지므로 높낮이를 조절할 수 있는 별도의 기능이 없었다.

[0003] 상기의 공간에서 근무를 하거나 수업을 받는 사람들은 대부분의 시간을 앉아서 생활하므로 척추가 휘어지는 척추 측만증이 발생하거나, 책상에 놓여진 책과 눈과의 거리 초점이 맞지 않아 눈이 쉽게 피로해지는 등의 정신적 육체적 스트레스가 쌓인다. 이로 인해, 건강한 정신과 육체의 성장에 좋지 못한 영향이 초래되므로 효율적인 업무를 수행하기 어려운 문제점이 있다.

[0004] 최근에는 이를 고려하여, 컴퓨터와 책이 받쳐지는 상판의 저면에 길이가 상대적으로 긴 지지대를 결합하여, 서 있는 상태에서 사용할 수 있는 책상이 보급되고 있다. 그러나, 일을 하기 위해 장 시간 서있는 것은 더욱 피곤하므로 이러한 책상으로 전술한 문제점을 해결하기에는 한계가 있다.

[0005] 장시간 앉아있는 것으로부터 규칙적으로 스트레칭, 운동 등의 휴식을 취하는 것은 신체 또는 정신에 긍정적인 결과를 가져올 수 있으나, 과중한 업무를 수행하는 현대인의 상황을 고려할 때 제약이 많다. 따라서, 계속적인 업무가 수행될 수 있으면서도 사용자의 건강을 고려할 수 있는 인체 공학적인 책상이 요구되고 있다.

[0006] 이러한 요구에 부응하여 최근에는 다양한 형태의 높이 조절 책상이 선보이고 있다. 이러한 높이 조절 책상 중 일부는 모터 등을 이용하여 책상 전체가 상하로 이동하도록 한 형태를 갖고 있으나, 이는 모터와 같은 액츄에이터를 필요로 하므로 제조비용이 상승하고, 구조가 복잡한 문제가 있다.

[0007] 높이 조절 책상의 다른 예로서, 스프링 등의 탄성부재와 이에 연결되는 링크 부재를 포함하여, 사용자가 수동으로 책상의 높이를 조절할 수 있도록 한 형태의 것들도 소개된 바 있다. 상기와 같은 수동 조작식 높이 조절 책상의 경우 구조가 간단하고 제조 비용이 낮은 이점은 있으나, 상대적으로 구조가 견고하지 못한 문제가 있다.

[0008] 특히, 높이를 조절하는 과정 및 높이 조절이 완료되어 고정된 상태에서도, 책상의 양쪽을 지지하는 링크 부재가 서로 독립적으로 이동하게 되어 책상이 안정적으로 지지되지 못하고 흔들리는 문제가 있었다.

발명의 내용

해결하려는 과제

[0009] 본 발명은 상기와 같은 문제점을 개선하기 위하여 제안된 것으로서, 종래에 비해서 구조가 간단하면서도 안정적으로 책상의 상판이 지지될 수 있는 높낮이 조절 가능한 책상을 제공하는 것을 목적으로 한다.

과제의 해결 수단

[0010] 본 발명의 일측면은, 베이스와, 상기 베이스에 대해서 높이가 가변되는 상판;

[0011] 상기 베이스와 상기 상판을 연결하는 제1 연결부재와, 상기 베이스와 상기 상판을 연결하고, 상기 제1 연결부재와 교차하여 회전축을 형성하는 제2 연결부재와, 상기 제1 연결부재 및 상기 제2 연결부재 중 어느 하나에 상기 회전축에서 이격되어 연결되는 실린더, 및 상기 제1 연결부재 및 상기 제2 연결부재 중 다른 하나에 연결되고, 상기 실린더에 삽입되며 상기 상판을 향하도록 배치된 피스톤 로드를 포함하는 높낮이 조절 가능한 책상을 제공한다.

[0012] 또한, 상기 피스톤 로드 및 상기 실린더의 중공은 상기 상판이 승강 또는 하강 시에 상기 상판을 향하면서 이동할 수 있다.

[0013] 또한, 상기 제1 연결부재와 상기 제2 연결부재의 교차하여 회전축을 형성하고, 상기 실린더의 단부는 상기 회전축에서 제1 거리로 이격되어 설치되고, 상기 피스톤 로드는 상기 회전축에서 상기 제1 거리와 다른 제2 거리로 이격되어 설치될 수 있다.

[0014] 또한, 상기 피스톤 로드의 단부은 상기 상판에 슬라이딩되는 상기 제1 연결부재 또는 상기 제2 연결부재의 단부에 설치될 수 있다.

[0015] 또한, 상기 실린더 및 상기 피스톤 로드는 상기 베이스에 대해서 경사각을 가지며, 상기 경사각은 5도 보다 크고, 70도 보다 작을 수 있다.

[0016] 또한, 상기 상판이 승강 또는 하강시에 상기 제1 연결부재, 상기 제2 연결부재, 상기 실린더 및 상기 피스톤 로

드가 삼각형을 유지할 수 있다.

[0017] 또한, 상기 제1 연결부재 또는 상기 제2 연결부재는 절곡 형성된 틈 형성부를 구비할 수 있다.

[0018] 또한, 상기 제1 연결부재 및 상기 제2 연결부재는 상기 상판의 양측에 마주보도록 설치되고, 마주보는 한 쌍의 상기 제1 연결부재를 연결하거나, 마주보는 한 쌍의 상기 제2 연결부재를 연결하는 링크 커넥터를 더 포함할 수 있다.

[0019] 또한, 상기 실린더 및 상기 피스톤 로드는 상기 상판이 승강 또는 하강하면, 상기 회전축을 중심으로 회전하면서 높이가 변화할 수 있다.

[0020] 또한, 상기 제1 연결부재와 상기 제2 연결부재가 교차하여 제1 평면을 형성하고, 상기 실린더 및 상기 피스톤 로드는 상기 제1 평면에서 이동할 수 있다.

[0021] 또한, 상기 높이 조절 가능한 책상은 상기 제1 연결부재와 상기 제2 연결부재가 교차하여 형성된 상기 회전축을 기준으로, 상기 상판 또는 상기 베이스에 회동 가능하도록 상기 제1 연결부재 및 상기 제2 연결부재가 연결되는 제1 영역, 및 상기 상판 또는 상기 베이스에 슬라이딩 및 회동 가능하도록 상기 제1 연결부재 및 상기 제2 연결부재가 연결되는 제2 영역으로 구분되고, 상기 실린더 및 상기 피스톤 로드는 는 상기 제2 영역에 설치될 수 있다.

발명의 효과

[0022] 본 발명의 실시예들은 실린더 및 피스톤 로드가 높이가 변화하면서 회전하므로, 책상의 높이를 높게 조절할 수 있다. 높이 조절 가능한 책상은 실린더 및 피스톤 로드가 제1 연결부재와 제2 연결부재를 연결하도록 설치되므로, 상판이 승강 또는 하강시에 높이조절기구는 높이가 변화하면서 동시에 회전하여, 상판의 높이를 높게 유지할 수 있다. 즉, 실린더 및 피스톤 로드는 회전각도가 크므로, 작은 스트로크로 상판의 높이를 조절 할 수 있다.

[0023] 본 발명의 실시예들은 피스톤 로드가 삽입되는 실린더가 상판을 향하도록 배치되므로, 오일 등의 유출을 방지할 수 있다.

도면의 간단한 설명

[0024] 도 1은 본 발명의 제 1 실시예에 따른 높낮이 조절 가능한 책상이 도시된 사시도이다.

도 2는 상판과 베이스를 분리한 높낮이 조절 가능한 책상이 도시된 사시도.

도 3은 도 1의 A를 확대한 사시도이다.

도 4는 본 발명의 제 1 실시예에 따른 높이조절기구를 설명하기 위한 측면도.

도 5는 본 발명의 제 1 실시예에 따른 상판이 하부로 이동된 모습을 보인 사시도이다.

도 6은 본 발명의 제 1 실시예에 따른 높낮이 조절 가능한 책상에 고정다리를 결합한 모습을 보인 사시도이다.

도 7은 본 발명의 제 1 실시예에 따른 높낮이 조절 가능한 책상과 고정다리의의 분해 사시도이다.

도 8은 본 발명의 제 2 실시예에 따른 높낮이 조절 가능한 책상의 사시도이다.

도 9는 본 발명의 제 2 실시예에 따른 보조 받침대를 분리한 모습을 보인 사시도이다.

도 10은 본 발명의 제 3 실시예에 따른 높낮이 조절 가능한 책상의 사시도이다.

도 11은 본 발명의 제 3 실시예에 따른 높이조절기구의 결합구조를 설명하기 위한 확대도이다.

도 12는 본 발명의 제 3 실시예에 따른 상판이 하부로 이동된 모습을 보인 사시도이다.

도 13은 본 발명의 제 4 실시예에 따른 높낮이 조절 가능한 책상의 사시도이다.

도 14는 본 발명의 제 4 실시예에 따른 상판과 베이스를 분리한 높낮이 조절 가능한 책상이 도시된 사시도이다.

도 15는 본 발명의 제 4 실시예에 따른 상판이 하부로 이동된 모습을 보인 사시도이다.

도 16은 본 발명의 제 5 실시예에 따른 높낮이 조절 가능한 책상이 도시된 사시도이다.

도 17는 본 발명의 제 5 실시예의 상판이 상승되었을 때의 측면도이다.

도 18는 본 발명의 제 5 실시예의 상판이 최저 높이로 하강되었을 때의 측면도이다.

도 19은 본 발명의 제 6 실시예의 상판이 스토퍼에 의해 상승 제한될 때의 단면도이다.

도 20은 본 발명의 제 6 실시예의 상판이 스토퍼에 의해 하강 제한될 때의 단면도이다.

도 21은 본 발명의 제 7 실시예에 따른 높낮이 조절 가능한 책상의 후방측 사시도이다.

도 22은 본 발명의 제 7 실시예의 수평 유지부가 확대 도시된 사시도이다.

도 23은 본 발명의 제 8 실시예의 높낮이 조절 가능한 책상이 도시된 사시도이다.

도 24은 본 발명의 제 9 실시예의 높낮이 조절 가능한 책상이 도시된 사시도이다.

도 25은 본 발명의 제 10 실시예의 높낮이 조절 가능한 책상이 도시된 사시도이다.

도 26은 본 발명의 제 11 실시예의 높낮이 조절 가능한 책상이 도시된 사시도이다.

도 27은 본 발명의 제 12 실시예의 높낮이 조절 가능한 책상의 상판이 상승되었을 때의 사시도이다.

도 28은 본 발명의 제 12 실시예의 높낮이 조절 가능한 책상의 상판이 하강되었을 때의 사시도이다.

도 29는 본 발명의 제 13 실시예의 높낮이 조절 가능한 책상이 도시된 사시도이다.

도 30은 본 발명의 제 13 실시예의 높낮이 조절 가능한 책상이 도시된 측면도이다.

도 31은 상기 제13 실시예의 변형예를 도시한 사시도이다.

발명을 실시하기 위한 구체적인 내용

[0025] 이하에서는 본 발명의 구체적인 실시예를 도면과 함께 상세히 설명하도록 한다.

[0026] 이하, 첨부된 도면을 참조하여 본 명세서에 개시된 실시예를 상세히 설명하되, 도면 부호에 관계없이 동일하거나 유사한 구성요소는 동일한 참조 번호를 부여하고 이에 대한 중복되는 설명은 생략하기로 한다. 이하의 설명에서 사용되는 구성요소에 대한 접미사 "부"는 명세서 작성의 용이함만이 고려되어 부여되거나 혼용되는 것으로서, 그 자체로 서로 구별되는 의미 또는 역할을 갖는 것은 아니다. 또한, 본 명세서에 개시된 실시예를 설명함에 있어서 관련된 공지 기술에 대한 구체적인 설명이 본 명세서에 개시된 실시예의 요지를 흐릴 수 있다고 판단되는 경우 그 상세한 설명을 생략한다. 또한, 첨부된 도면은 본 명세서에 개시된 실시예를 쉽게 이해할 수 있도록 하기 위한 것일 뿐, 첨부된 도면에 의해 본 명세서에 개시된 기술적 사상이 제한되지 않으며, 본 발명의 사상 및 기술 범위에 포함되는 모든 변경, 균등물 내지 대체물을 포함하는 것으로 이해되어야 한다.

[0027] 도 1은 본 발명의 제 1 실시예에 따른 높낮이 조절 가능한 책상이 도시된 사시도 이고, 도 2는 상판과 베이스를 분리한 높낮이 조절 가능한 책상이 도시된 사시도 이며, 도 3은 도 1의 A를 확대한 사시도 이다.

[0028] 도 1 내지 도 3을 참조하면 본 발명의 제 1 실시예에 따른 높낮이 조절 가능한 책상(100)은 베이스(120)와, 상판(110)를 포함할 수 있다.

[0029] 베이스(120)는 높낮이 조절 가능한 책상(100)의 하부를 형성할 수 있고, 하면이 지면 또는 바닥면에 접촉되어 높낮이 조절 가능한 책상(100)을 지지할 수 있다. 베이스(120)의 전방에는 후방을 향해 소정거리 함몰되는 함몰홈(122)이 형성될 수 있다. 함몰홈(122)은 사용자의 신체 중 일부를 수용할 수 있고, 사용자는 높낮이 조절 가능한 책상(100)의 전방에 위치할 경우 높낮이 조절 가능한 책상(100)에 보다 가까이 다가갈 수 있다.

[0030] 상판(110)은 대략 판 형상으로 형성된다. 경우에 따라서, 상판(110)은 함몰홈(122)을 포함한 베이스(120)의 단면 형상과 대응되도록 형성될 수 있다. 상판(110)의 상면에는 사용자의 업무 또는 학습 도구들이 놓일 수 있다. 예를 들면, 상판(110)의 상면에는 모니터, 책, 키보드 등 다양한 도구들이 놓일 수 있다.

[0031] 그리고, 상판(110)의 후방부에는 전방을 향해 함몰되는 배선 수용홈(187)이 형성될 수 있다. 배선 수용홈(187)은 상판(110)의 후방부 일부가 내측으로 함몰되어 상판(110)에 구비될 수 있다. 배선 수용홈(187)에는 상판(110)에 놓여지는 업무 도구 중 일부가 수용될 수 있다. 예를 들면, 상판(110)에 컴퓨터 모니터가 놓여질 경우, 컴퓨터 모니터로 전력을 제공하는 배선이 배선 수용홈(187)에 수용됨으로써 보다 깔끔하게 정돈될 수 있다.

[0032] 높이 조절 가능한 책상은 상판(110)과 베이스(120)를 연결하며, 베이스(120)에 대한 상판(110)의 높이를 조절하

기 위한 높이조절수단을 포함할 수 있다.

[0033] 높이조절수단은 상판(110)의 아래에 위치되게 구비될 수 있다. 높이조절수단은 베이스(120)와 상판(110)의 사이에 배치될 수 있다.

[0034] 높이조절수단은 베이스(120)와 상판(110) 사이에 배치되어 상판(110)을 승강 가능하게 지지하는 링크 기구를 포함할 수 있다. 높이조절수단은 사용자의 조작시 상판(110)을 상승시키는 방향으로 가압하는 구동원을 포함할 수 있다.

[0035] 높이조절수단은 상판(110)을 베이스(120)에 대하여 상대 이동시키기 위한 복수의 연결부재(130,140)를 포함할 수 있다. 복수의 연결부재(130,140)는 상판(110)과 베이스(120)와 거리가 변화되게 상판(110)을 승강시킬 수 있다.

[0036] 복수의 연결부재(130,140)는 상판(110)과 베이스(120)의 사이에서 양 측에 각각 구비될 수 있다. 복수의 연결부재(130, 140)는 상판(110)의 후방 측 저면으로부터 베이스(120)의 전방 측 상면을 향해 연장되는 제 1 연결부재(130)와, 상판(110)의 전방 측 저면으로부터 베이스(120)의 후방 측 상면을 향해 연장되는 제 2 연결부재(140)를 포함한다. 제 1 연결부재(130)와 제 2 연결부재(140)는 상판(110)과 베이스(120)의 사이에서 서로 교차되게 배치될 수 있다. 제 1 연결부재(130)와 제 2 연결부재(140)는 옆에서 볼 때, 대략 'X'자 형태를 이루게 배치될 수 있다.

[0037] 제 1 연결부재(130)는 일단이 베이스(120)의 전방 측 상면에 구비되는 제 1 결합부(160)와 결합되고, 타단이 상판(110)의 후방 측 저면에 구비되는 제 1 이동프레임(165)에 슬라이딩 이동되는 제 1 이동부(169)와 결합된다. 제 1 결합부(160)와 제 1 이동프레임(165)은 제 1 연결부재(130)의 개수에 대응하여 베이스(120)의 상면 양측과 상판(110)의 저면 양측에 각각 구비된다.

[0038] 제 1 결합부(160)는, 하면이 베이스(120)의 상면에 나사 또는 링크를 통해 결합되는 제 1 수평부(164)와, 제 1 수평부(164)의 일측으로부터 상방을 향해 연장되어 제 1 연결부재(130)의 일단이 결합되는 제 1 수직부(162)를 포함한다. 그리고, 제 1 수직부(162)의 측면에 제 1 연결부재(130)의 일단이 회동 가능하도록 힌지 결합된다. 즉, 제 1 연결부재(130)로부터 제 1 수직부(162)를 관통하는 힌지핀(131)에 의해 제 1 연결부재(130)의 일단이 회동 가능하도록 결합된다.

[0039] 제 1 이동프레임(165)은 상판(110)의 후방 측 하면 양측에 각각 구비된다. 제 1 이동프레임(165)은, 상면이 상판(110)의 하면에 결합되는 제 1 상면부(166)와, 제 1 상면부(166)의 일측에서 하방을 향해 연장되는 제 1 측면부(167)와, 제 1 측면부(167)의 단부로부터 내측을 향해 연장되는 제 1 하면부(168)를 포함한다. 제 1 상면부(166)와 제 1 측면부(167) 와 상기 제 1 하면부(168)에 의해 제 1 이동프레임(165)의 단면 형상은 대략 ㄷ 자 형상을 이룬다. 그리고, 제 1 이동프레임(165)의 제 1 상면부(166)와 제 1 측면부(167)와 제 1 하면부(168)에 의해 형성되는 공간에는 제 1 이동부(169)의 외면이 접하며 슬라이딩 이동될 수 있다.

[0040] 제 1 이동부(169)의 측면에는 제 1 연결부재(130)의 타단이 힌지 결합되어, 제 1 이동부(169)가 제 1 이동프레임(165)을 슬라이딩 이동할 경우 제 1 연결부재(130)의 기울기가 변경된다. 다시 말하면, 제 1 연결부재(130)는 제 1 수직부(162)와의 힌지 결합과 제 1 이동부(169)와의 힌지 결합을 통해, 상판(110) 및 베이스(120)와 이루는 각도가 변경된다. 도 2 에 도시된 바와 같이, 제 1 연결부재(130)가 베이스(120)와 이루는 각도가 상대적으로 높을 경우에는 제 1 이동부(169)가 제 1 이동프레임(165)의 전방에 가깝게 위치하고, 제 1 연결부재(130)가 베이스(120)와 이루는 각도가 상대적으로 낮을 경우에는 제 1 이동부(169)가 제 1 이동프레임(165)의 후방에 가깝게 위치한다. 제 1 연결부재(130)의 타단이 슬라이딩 이동됨과 동시에 제 1 연결부재(130)의 일단은 제 1 결합부(160)를 통해 회동될 수 있다.

[0041] 제 2 연결부재(140)는 일단이 상판(110)의 전방 측 하면에 구비되는 제 2 결합부(145)와 결합되고, 타단이 베이스(120)의 후방 측 상면에 구비되는 제 2 이동프레임(170)에 슬라이딩 이동되는 제 2 이동부(144)에 결합된다. 제 2 결합부(145)와 제 2 이동프레임(170)은 제 2 연결부재(140)의 개수에 대응하여 베이스(120)의 상면 양측과 상판(110)의 저면 양측에 각각 구비된다.

[0042] 제 2 결합부(145)는, 상면이 상판(110)의 하면에 나사 또는 링크를 통해 결합되는 제 2 수평부(146)와, 제 2 수평부(146)의 일측으로부터 하방을 향해 연장되어 제 2 연결부재(130)의 일단이 결합되는 제 2 수직부(147)를 포함한다. 그리고, 제 2 수직부(147)의 측면에 제 2 연결부재(140)의 일단이 회동 가능하도록 힌지 결합될 수 있다. 즉, 제 2 연결부재(140)로부터 제 2 수직부(147)를 관통하는 힌지핀에 의해 제 2 연결부재(140)의 일단이

회동 가능하도록 결합될 수 있다.

[0043] 제 2 이동프레임(170)은 베이스(120)의 후방 측 상면 양측에 각각 구비된다. 제 2 이동프레임(170)은 하면이 베이스(110)의 상면에 결합되는 제 2 하면부(172)와, 제 2 하면부(172)의 일측에서 상방을 향해 연장되는 제 2 측면부(174)와, 제 2 측면부(174)의 단부로부터 외측을 향해 연장되는 제 2 상면부(176)를 포함한다. 제 2 하면부(172)와 제 2 측면부(174)와 제 2 상면부(176)에 의해 제 2 이동프레임(165)의 단면 형상은 대략 ㄷ 자 형상을 이룬다. 그리고, 제 2 이동프레임(170)에는, 상기 제 2 하면부(172)와 상기 제 2 측면부(174)와 상기 제 2 상면부(176)에 의해 형성되는 공간을 슬라이딩 이동 하도록 제 2 이동부(144)가 구비된다.

[0044] 제 2 이동부(144)의 측면에는 제 2 연결부재(140)의 타단이 힌지 결합되어, 제 2 이동부(144)가 제 2 이동프레임(170) 상을 슬라이딩 이동할 경우 제 2 연결부재(140)의 기울기가 변경된다. 다시 말하면, 제 2 연결부재(140)는 제 2 수직부(147)와의 힌지 결합과 제 2 이동부(144)와의 힌지 결합을 통해, 상판(110) 및 베이스(120)와 이루는 각도가 변경된다. 도 2 에 도시된 바와 같이, 제 2 연결부재(140)가 베이스(120)와 이루는 각도가 상대적으로 높을 경우에는 제 2 이동부(144)가 제 2 이동프레임(170)의 전방에 가깝게 위치하고, 제 2 연결부재(130)가 상기 베이스(120)와 이루는 각도가 상대적으로 낮을 경우에는 제 2 이동부(144)가 제 2 이동프레임(170)의 후방에 가깝게 위치한다. 제 2 연결부재(140)의 타단이 슬라이딩 이동됨과 동시에 제 2 연결부재의 일단은 제 2 결합부(145)를 통해 회동될 수 있다.

[0045] 정리하면, 제 1 결합부(160)와 제 2 결합부(145)는 상판(110)의 하면과 베이스(120)의 상면에서 상호 대칭되도록 구비될 수 있고, 제 1 이동프레임(165)과 제 2 이동프레임(170)은 상판(110)의 하면과 베이스(120)의 상면에서 상호 대칭되도록 구비될 수 있다.

[0046] 한편, 제 1 연결부재(130)와 제 2 연결부재(140)가 상호 교차하는 영역에는 회전 중심을 형상하는 회동축(150)이 끼워진다. 상세히, 회동축(150)의 양단부는 양측에 배치되는 복수의 연결부재(130, 140)이 서로 교차하는 영역에 각각 끼워질 수 있다. 이를 위하여, 제 1 연결부재(130)와 제 2 연결부재(140)가 교차하는 영역에는 회동축(150)이 끼워지도록 각각 상호 대응되는 관통홀(미도시)이 형성되고, 관통홀에 회동축(150)의 양단부가 끼워져 고정된다. 따라서, 회동축(150)을 통해 제 1 연결부재(130)와 제 2 연결부재(140)는 상대 회동될 수 있다. 다시 말하면, 회동축(150)은 제 1 연결부재(130)와 제 2 연결부재(140)에 의해 형성되는 'X'자 형상의 중심축을 형성할 수 있다.

[0047] 그리고, 높낮이 조절 가능한 책상(100)의 양측에 각각 복수로 배치되는 제 1 연결부재(130)에는 복수의 제 1 연결부재(130)가 평행하게 동작될 수 있도록 복수개의 제 1 연결부재(130)를 연결하는 연결부재 커넥터(미도시)가 구비될 수 있다. 본 실시예는 복수개의 제 1 연결부재(130)의 내측면에 연결된 결합축(155)이 연결부재 커넥터로 기능할 수 있다.

[0048] 또한, 높낮이 조절 가능한 책상(100)의 양측에 각각 복수로 배치되는 제 2 연결부재(140)에는 복수의 제 2 연결부재(140)가 평행하게 동작될 수 있도록 복수개의 제 2 연결부재(140)를 연결하는 커넥터(142)가 구비될 수 있다.

[0049] 도 4는 본 발명의 제 1 실시예에 따른 높이조절기구를 설명하기 위한 측면도 이다.

[0050] 도 1 및 도 4를 참조하면, 높낮이 조절 가능한 책상(100)은 상판(110)의 높이가 가변되게 설치된 높이조절기구(180)를 포함할 수 있다. 높이조절기구(180)는 가스 스프링과 유압 슬린더 중 적어도 하나를 포함할 수 있다.

[0051] 복수의 제 1 연결부재(130)는 서로 대향되게 위치될 수 있고, 복수의 제 1 연결부재(120)에는 결합축(155)의 양단부가 끼워진다. 결합축(155)은 후술할 높이조절기구(180)의 단부가 결합되는 구성일 수 있고, 복수로 구비되는 제 1 연결부재(130)의 내측면 사이에 수평하게 배치될 수 있고, 복수의 제 1 연결부재(130)에 끼워져 고정된다.

[0052] 그리고, 상판(110)의 전방 측 하면에는 높이조절기구(180)의 또 다른 단부가 끼워지는 높이조절기구 결합부(115)가 구비된다. 높이조절기구 결합부(115)는 상기 상판(110)의 하면 중 전단에 가깝도록 배치될 수 있다. 상세히, 높이조절기구 결합부(115)는 상판(110)의 하면에 결합되는 결합부 몸체(116)와, 결합부 몸체(116)의 일측으로부터 하방으로 연장되어 높이조절기구(180)의 단부가 통과되도록 축이 구비되는 결합부 연장체(117)를 포함할 수 있다. 높이조절기구 결합부(115)는 각각 중심에 대해 서로 대칭하여 복수로 구비될 수 있다.

[0053] 그리고, 상판(110)의 높낮이를 조절하기 위하여 일단이 높이조절기구 결합부(115)에 끼워지고, 타단이 결합축(155)에 끼워지는 높이조절기구(180)이 구비된다. 도 4에 도시된 바와 같이, 높이조절기구(180)은 중공의 튜브

형상의 실린더(181)와, 실린더(181) 안의 중공 부분에 삽입되는 피스톤 로드(182)를 포함한다. 그리고, 실린더(181)의 하부에 배치되는 결합부(184)에 홀(184a)이 형성되어, 결합축(155)이 홀(184a)을 관통함으로써 높이조절기구(180)의 타단을 고정시킨다. 또한, 피스톤 로드(182)의 상부에는 마찬가지로 결합부 연장체(117)에 구비된 축이 통과하도록 홀(182a)이 형성되며, 결합부 연장체(117)의 축이 홀(182a)을 통과함으로써 높이조절기구(180)의 일단을 고정시킨다.

[0054] 한편, 높이조절기구(180)은 피스톤 로드(182)가 실린더(181)에 대하여 상하 동작됨으로써 길이가 가변될 수 있는 구성이다. 즉, 실린더(181) 의 내부에는 가스가 주입되고, 가스가 피스톤 로드(182)에 가해지는 압력을 통해 피스톤 로드(182)의 위치가 변경된다. 피스톤 로드(182)의 상측에는 내부 가스를 선택적으로 개폐하기 위한 가스 개폐 핀과 가스 개폐 핀을 동작시키기 위한 개폐 가이드가 구비되고, 개폐 가이드에 케이블(189)의 일단이 연결된다. 따라서, 케이블(189)이 당겨지는 동작에 의해 높이조절기구(180) 내의 가스가 이동되고, 압력에 의해 피스톤 로드(182)가 상하 이동될 수 있다. 그리고, 케이블(189)이 당겨지는 힘이 해제되면, 피스톤 로드(182)의 위치는 고정될 수 있다.

[0055] 본 명세서에서 높이조절기구(180)은 버튼부(195)의 동작을 통해 케이블(189)을 당겨져서 전체 길이가 조절되는 구성으로써, 가스 또는 유체의 압력을 이용하여 길이가 조절되는 구성이라면 높낮이 조절 가능한 책상(100)에 채용될 수 있다. 다시 말하면, 높이조절기구(180)은 가스 스프링 외에도 유체 및 공기의 압력을 통해 길이가 가변될 수 있는 유압 실린더도 채용 가능하다.

[0056] 상판(110)의 하부 양측에는 상판(110)의 하면에 결합되며, 케이블(189)의 타단이 끼워지는 버튼부(195)가 배치되도록 조작부(190)가 구비된다. 즉, 본 실시예에서는 높이조절기구(180)이 두 개로 구비된 것을 일 예로 하였으므로, 조작부(190)도 각각 상판(110)의 하부 양측에 각각 구비된다. 따라서, 케이블(189)은 일단이 피스톤 로드(182)에 끼워지고 타단이 버튼부(195)에 끼워져, 버튼부(195)의 가압력이 케이블(189)을 통해 개폐 가이드에 전달됨으로써 높이조절기구(180)의 길이가 가변될 수 있다.

[0057] 이하에서는, 높낮이 조절 가능한 책상(100)의 높낮이를 조절하는 과정에 대해 설명하기로 한다.

[0058] 도 5는 본 발명의 제 1 실시예에 따른 상판이 하부로 이동된 모습을 보인 사시도 이다.

[0059] 도 1 및 도 5를 참조하면, 본 발명의 제 1 실시예에 따른 높낮이 조절 가능한 책상(100)은 상판(110)의 높이가 가변 된다. 사용 예로, 높낮이 조절 가능한 책상(100)은 다른 높낮이 조절 가능한 책상의 상면에 놓여 사용될 수 있다. 이 때, 상판(110)이 도 5에서와 같이 베이스(120)에 가깝게 위치할 경우 사용자는 앉은 상태에서 업무를 수행할 것이다. 그리고, 상판(110)이 도 1에서와 같이 상부로 이동될 경우에는 상판(110)의 눈높이에 맞추어 서있는 상태를 취할 수 있다.

[0060] 조작과정을 상세히 설명하면, 사용자의 조작을 통해 버튼부(195)에 푸쉬가 가해지고, 케이블(189)을 거쳐 높이조절기구(180)에 외력이 전달된다. 즉, 버튼부(195)가 푸쉬된 상태에서는 높이조절기구(180)의 길이가 가변될 수 있는 상태로서 이해된다. 다시 말하면, 버튼부(195)를 푸쉬한 상태에서는 상판(110)이 높이조절기구(180)의 내부에 있는 가스의 압력에 의해 베이스(120)로부터 멀어지도록 상방으로 이동된다. 즉, 높이조절기구(180)은 버튼부(195)의 푸쉬로 인해 내부 가스가 압력을 작용하여, 피스톤 로드(182)가 상방으로 올라옴으로써 길이가 신장되도록 구성될 수 있다.

[0061] 상판(110)의 높이를 높일 경우 버튼부(195)를 푸쉬하게 되고, 상판(110)의 높이를 낮출 경우에는 버튼부(195)를 푸쉬한 상태에서 상판(110)을 하방으로 미는 동작을 취하게 된다. 이러한 사용자의 동작에 의해, 높이조절기구(180)의 높낮이는 가변되고, 제 1 이동부(169)와 제 2 이동부(144)가 각각 제 1 이동 프레임(165)과 제 2 이동 프레임(170)에서 슬라이딩 이동될 수 있다. 상판(110)은 버튼부(195)에 가해지는 가압력을 해제할 경우, 이동 중에도 높이조절이 정지될 수 있다. 따라서, 상판(110)의 높이는 도 1과 도 5에 도시된 높이 사이에서 다양하게 가변될 수 있다.

[0062] 상판(110)이 하방으로 이동되는 것을 예로 들면, 사용자의 하방으로 미는 힘에 의해, 높이조절기구(180)의 길이가 짧아지게 되고, 제 2 이동부(144)는 상기 제 2 이동프레임(170) 상에서 후방으로 슬라이딩 이동 될 것이다. 그리고, 제 1 연결부재(130)와 제 2 연결부재(140)는 베이스(120)와 형성하는 각도가 작아지도록 상측 단부가 하방으로 이동된다.

[0063] 상판(110)이 상방으로 이동될 경우에는, 버튼부(195) 만을 푸쉬함으로써, 높이조절기구(180)의 길이가 길어지고, 제 2 이동부(144)는 제 2 이동프레임(170) 상에서 전방으로 슬라이딩 이동 될 것이다. 그리고, 제 1 연결부재(130)와 상기 제 2 연결부재(140)는 베이스(120)와 형성하는 각도가 커지도록 상측 단부가 상방으로 이

동된다.

[0064] 이처럼 높낮이 조절 가능한 책상(100)은 버튼부(195)의 조작을 통한 간단한 동작만으로 상판(110)의 높낮이를 조절할 수 있어, 사용자의 편의성이 증대되는 장점이 있다. 또한, 장시간 앉아 있는 사용자는 상판(110)의 높낮이를 다양하게 조절하여 보다 활동적인 업무를 수행할 수 있을 것이다.

[0065] 도 6은 본 발명의 제 1 실시예에 따른 높낮이 조절 가능한 책상에 고정다리를 결합한 모습을 보인 사시도 이며, 도 7은 본 발명의 제 1 실시예에 따른 높낮이 조절 가능한 책상과 고정다리의의 분해 사시도 이다.

[0066] 도 6 및 도 7을 참조하면, 베이스(120)의 하면에는 높낮이 조절 가능한 책상(100)을 지지하며 높낮이 조절 가능한 책상(100)을 지면으로부터 이격시키는 고정다리(200)가 구비될 수 있다. 전술한 바와 같이, 높낮이 조절 가능한 책상(100)은 다른 높낮이 조절 가능한 책상의 상면에 놓여 사용될 수 있으나 다른 높낮이 조절 가능한 책상이 필요하게 되므로, 고정다리(200)를 통해 높낮이 조절 가능한 책상(100)을 단독으로 사용할 수 있다.

[0067] 고정다리(200)는 베이스(120)의 저면에 결합되는 베이스 결합부(202)와, 하면에 고정다리(200)를 지면으로부터 이격시키는 레그(210)가 결합되는 레그 결합부(209)와, 베이스 결합부(202)와 상기 레그 결합부(209)를 연결시키는 고정다리 몸체(205)를 포함한다.

[0068] 베이스 결합부(202)의 단면 형상은 베이스(120)의 저면의 단면 형상에 대응되도록 형성되어 베이스(120)의 저면에 결합된다. 그리고, 상기 레그 결합부(209)의 하면에는 레그(210)가 구비되어 고정다리(200)가 지면으로부터 이격될 수 있다. 레그(210)는 레그 결합부(209)의 하면 네 모서리에 모두 구비될 수 있다.

[0069] 고정다리 몸체(205)는 베이스 결합부(202)와 레그 결합부(209)를 연결하며, 길이 방향으로 연장되어 높낮이 조절 가능한 책상(100)의 높이를 형성한다. 고정다리 몸체(205)의 높이는 사용자의 의도와 목적에 맞게 다양하게 조절되어 제작될 수 있다.

[0070] 따라서, 높낮이 조절 가능한 책상(100)의 하부에 고정다리(200)를 구비함으로써 높낮이 조절 가능한 책상(100)이 단독으로 사용될 수 있으며, 고정다리(200)가 결합된 상태에서도 상판(110)의 높낮이를 조절함으로써 사용자의 업무환경을 다양하게 변화시킬 수 있다.

[0071] 한편, 베이스(120)의 하면에는 지지다리가 결합될 수 있다. 상기 지지다리는 베이스(120)의 하면 중 네 모서리에 각각 결합되어 높낮이 조절 가능한 책상(100)을 지지할 수 있다.

[0072] 지지다리는 고정다리 하부(199b)가 고정다리 상부로 대하여 상하로 이동됨으로써 지면으로부터 높낮이 조절 가능한 책상(100)까지의 상하 길이가 조절되도록 구성될 수 있다.

[0073] 도 8은 본 발명의 제 2 실시예에 따른 높낮이 조절 가능한 책상의 사시도 이고, 도 9는 본 발명의 제 2 실시예에 따른 보조 받침대를 분리한 모습을 보인 사시도 이다.

[0074] 본 실시예는 다른 부분에 있어서는 제 1 실시예와 동일하고, 다만 보조 받침대에 있어서 차이가 있다. 따라서, 이하에서는 본 실시예의 특징적인 부분에 대해서만 설명하고 제 1 실시예와 동일한 부분은 제 1 실시예를 원용하기로 한다.

[0075] 도 8 및 도 9를 참조하면, 본 실시예에 따른 높낮이 조절 가능한 책상(220)에는, 상판(110)의 하측에 배치되는 판 형상의 보조 받침대(230)를 더 포함할 수 있다. 보조 받침대(230)는 상면이 제 2 결합부(145) 중 제 2 수직부(147)의 하면에 결합된다.

[0076] 상세히, 보조 받침대(230)에는 상면으로부터 하면을 관통하는 링크홀(231)이 형성될 수 있다. 링크홀(231)은 보조 받침대(230)의 후방에 인접하여 양측에 각각 형성된다. 그리고, 제 2 수직부(147)의 하면에는 보조 받침대(230)와 제 2 수직부(147)를 결합시키기 위한 링크부재(148)가 끼워지도록 링크홈(미도시)이 형성된다.

[0077] 보조 받침대(230)의 결합은, 상판(110)의 하부 양측에 복수로 배치되는 제 2 수직부(147)의 하면에, 링크홀(231)과 링크홈이 서로 대응되도록 보조 받침대(230)가 맞대어, 링크부재(148)를 통해 이루어질 수 있다. 추가로 링크홀(231) 및 링크부재(148)의 개수를 늘림으로써 보다 견고하게 보조 받침대(230)를 상판(110)의 하측에 고정시키는 것도 가능하다.

[0078] 따라서, 본 실시예에서는 높낮이 조절 가능한 책상(220)에 보조 받침대(230)를 추가로 구비함으로써 보다 많은 업무도구가 놓여질 수 있다. 일 예로 상판(110)의 상면에 컴퓨터 모니터가 배치될 경우 보조 받침대(230)의 상면에는 키보드를 구비함으로써, 상판(110)의 상면에 보다 넓은 여유 공간을 갖출 수 있다.

[0079] 한편, 베이스(120)에는, 가장자리를 따라 베이스(120)의 상면이 가려지도록 측벽(125)이 구비될 수 있다. 측벽(125)은 베이스(120)의 상면 보다 높은 높이를 갖도록 형성되어 베이스(120)의 측면에 결합된다. 측벽(125)이 결합될 경우, 상기 베이스(120)의 상면에 먼지, 이물질 등이 쌓이는 것을 방지할 수 있고, 높낮이 조절 가능한 책상(220)의 외관을 보다 세련되게 형성할 수 있는 장점이 있다.

[0080] 도 10은 본 발명의 제 3 실시예에 따른 높낮이 조절 가능한 책상의 사시도 이고, 도 11은 본 발명의 제 3 실시예에 따른 높이조절기구의 결합구조를 설명하기 위한 확대도 이며, 도 12는 본 발명의 제 3 실시예에 따른 상판이 하부로 이동된 모습을 보인 사시도 이다.

[0081] 본 실시예는 다른 부분에 있어서는 제 1 실시예와 동일하고, 다만 높이조절기구의 결합 위치에 있어서 차이가 있다. 따라서, 이하에서는 본 실시예의 특징적인 부분에 대해서만 설명하고 제 1 실시예와 동일한 부분은 제 1 실시예를 원용하기로 한다.

[0082] 도 10 내지 도 12를 참조하면, 본 발명의 제 3 실시예에 따른 높낮이 조절 가능한 책상(300)은, 높이조절기구(180)이 베이스(120)의 상면에 구비된다.

[0083] 상세히, 높낮이 조절 가능한 책상(300)은 상판(110)과 하판(120), 그리고 상판(110)과 하판(120)의 사이에서 상판(110)을 상대 이동시키기 위한 상기 제 1 연결부재(130) 및 제 2 연결부재(140)를 포함한다. 그리고, 제 2 연결부재(140)의 일단은 상판(110)의 전방 측 상면에 구비되는 제 2 결합부(145)의 제 2 수직부(147)와 힌지 결합되고, 제 2 연결부재(140)의 타단은 제 2 이동프레임(170) 상에 슬라이딩 이동되는 제 2 이동부(144)의 일면에 힌지 결합된다.

[0084] 이 때, 높이조절기구(180)은 제 2 연결부재(140)의 타단에서 제 2 이동부(144)와 결합되는 면의 반대면에 피스톤 로드(182)의 단부가 결합된다. 즉, 제 2 연결부재(140) 타단의 일면은 제 2 이동부(144)와 결합되고, 제 2 연결부재(140) 타단의 타면은 피스톤 로드(182)의 단부가 결합된다. 경우에 따라서, 피스톤 로드(182)은 단부에 형성된 홀(182a, 도 4 참조)을 통해 제 2 연결부재(140)의 타단을 관통하여 제 2 이동부(144)에 삽입되는 핀(P)을 통해 결합될 수 있다.

[0085] 따라서, 높이조절기구(180)은 피스톤 로드(182)의 단부가 제 2 연결부재(140)의 타단에 결합된 상태로 실린더(181)의 베이스(120)의 후방으로 연장되어 베이스(120)의 상면에 위치될 수 있다. 한편, 제 1 실시예와 동일하게 상 피스톤 로드(182)의 일측에서 연장되어 개폐 가이드를 선택적으로 가압하기 위한 케이블(189)은, 상판(110)의 하면에 구비되는 버튼부(195)에 연결됨으로써 사용자에 의해 조작된다.

[0086] 그리고, 본 발명의 제 3 실시예의 따른 높낮이 조절 가능한 책상(300)의 높낮이 조절은 제 1 실시예의 따른 높낮이 과정과 동일하게 이루어진다. 즉, 사용자는 버튼부(195)를 푸쉬한 상태에서 상판(110)을 하방으로 밀거나 상방으로 당기는 동작에 의해, 상판(110)의 높낮이를 조절할 수 있다.

[0087] 도 13은 본 발명의 제 4 실시예에 따른 높낮이 조절 가능한 책상의 사시도 이고, 도 14는 본 발명의 제 4 실시예에 따른 상판과 베이스를 분리한 높낮이 조절 가능한 책상이 도시된 사시도 이며, 도 15는 본 발명의 제 4 실시예에 따른 상판이 하부로 이동된 모습을 보인 사시도 이다.

[0088] 본 실시예는 다른 부분에 있어서는 제 1 실시예와 동일하고, 다만 높이조절기구의 위치에 있어서 차이가 있다. 따라서, 이하에서는 본 실시예의 특징적인 부분에 대해서만 설명하고 제 1 실시예와 동일한 부분은 제 1 실시예를 원용하기로 한다.

[0089] 도 13 내지 도 15를 참조하면, 본 발명의 제 4 실시예에 따른 높낮이 조절 가능한 책상(400)은, 상판(110)이 베이스(120)의 상부에서 제 2 연결부재(140)와 높이조절기구(180)을 통해 지지된다. 즉, 본 실시예에서는 제 1 연결부재(130)가 제외된다.

[0090] 상세히, 제 2 연결부재(140)는 일단이 상판(110)의 전방 측 하면에 구비되는 제 2 결합부(145)와 결합되고, 타단이 베이스(120)의 후방 측 상면에 구비되는 제 2 이동프레임(170)에 슬라이딩 이동되는 제 2 이동부(144)에 결합된다. 그리고, 높이조절기구(180)은 일단이 베이스(120)의 전방 측 상면에 구비되는 제 1 결합부(160)와 결합되고, 타단이 상판(110)의 후방 측 저면에 구비되는 제 1 이동프레임(165)에 슬라이딩 이동되는 제 1 이동부(169)와 결합된다. 다시 말하면, 본 발명의 제 1 실시예의 따른 제 1 연결부재(130)의 위치에 높이조절기구(180)이 배치되는 것이다.

[0091] 높이조절기구(180)의 일단은 실린더(181)의 단부에 형성된 홀(184a, 도 4참조)을 관통하는 핀(403)을 통해 제 1 수직부(162)의 일면에 결합된다. 그리고, 높이조절기구(180)의 타단은 피스톤 로드(182)의 단부에 형성된 홀

(182a)을 관통하는 핀(405)을 통해 제 1 이동부(169)의 일면에 결합된다. 핀들(403, 405)을 통한 결합은 힌지 결합일 수 있다.

[0092] 따라서, 본 실시예에서는 높이조절기구(180)가 상판(110)과 베이스(120)의 사이에 구비되어 피스톤 로드(182)의 상하 이동에 따라 길이가 가변된다. 즉, 도 15에 도시된 바와 같이 피스톤 로드(182)는 실린더(181)의 내부로 삽입되어 높이조절기구(180)의 길이가 짧아지면 상판(110)은 하방으로 이동되고, 피스톤 로드(182)는 상기 실린더(181)의 외부로 빠짐으로써 높이조절기구(180)의 길이가 길어지면 상기 상판(110)은 상방으로 이동된다.

[0093] 본 실시예에 따른 높낮이 조절 가능한 책상(400)의 조작방법은 버튼부(195)의 조작을 통해 이루어지는 제 1 실시예에 따른 높낮이 조절 가능한 책상(100)의 조작방법과 동일하므로, 이에 대한 설명은 생략하기로 한다.

[0094] 따라서, 본 실시예에서는 제 1 연결부재를 높이조절기구(180)로 대체함으로써, 부품수가 줄어들고 이에 따라 제조 단가가 저렴해지는 장점이 있다.

[0095] 도 16은 본 발명의 제 5 실시예에 따른 높낮이 조절 가능한 책상이 도시된 사시도이고, 도 17는 본 발명의 제 5 실시예의 상판이 상승되었을 때의 측면도이며, 도 18는 본 발명의 제 5 실시예의 상판이 최저 높이로 하강되었을 때의 측면도이다.

[0096] 도 16 내지 도 18을 참고하면, 높낮이 조절 가능한 책상은 베이스(120)와; 상판(110)과; 베이스(120)와 상판(110) 사이에 배치되어 상판(110)을 승강 가능하게 지지하는 링크 기구(L)를 포함할 수 있다.

[0097] 상판(110)은 탑 플레이트(111)와, 탑 플레이트(111)의 하부에 결합된 상부 프레임(112)을 포함할 수 있다.

[0098] 탑 플레이트(111)는 판체 형상으로 형성될 수 있고, 사용자는 탑 플레이트(111)의 상면에 모니터나 전화기나 각종 서류 등을 올려놓을 수 있다.

[0099] 상부 프레임(112)은 복수개가 탑 플레이트(111) 하부에 배치될 수 있다. 이 경우, 복수개의 상부 프레임(112)는 탑 플레이트(111) 하부에 좌우 방향으로 이격되게 위치될 수 있다. 복수개의 상부 프레임(112)는 탑 플레이트(111)의 좌측부 아래에 배치되는 좌측 상부 프레임과, 탑 플레이트(111)의 우측부 아래에 배치되는 우측 상부 프레임을 포함할 수 있다.

[0100] 상부 프레임(112)은 한 쌍의 링크(L1)(L2) 중 어느 하나와 힌지 결합될 수 있고, 한 쌍의 링크(L1)(L2) 중 다른 하나를 안내할 수 있다. 상부 프레임(112)는 탑 플레이트(111)의 저면에 위치되게 탑 플레이트(111)에 체결될 수 있다. 상부 프레임(112)은 탑 플레이트(111)에 스크류 등의 체결부재나 후크 등의 걸이부에 의해 장착될 수 있다. 상부 프레임(112)은 탑 플레이트(111)에 체결되는 상판부와, 상판부에서 수직하게 절곡된 측판부를 포함할 수 있다.

[0101] 상판(110)은 탑 플레이트(111)와 이격되는 로어 플레이트(113)를 더 포함할 수 있다. 로어 플레이트(113)은 탑 플레이트(111)와 높이차를 갖게 배치될 수 있다. 사용자는 로어 플레이트(113) 상면에 키보드나 마우스 등을 올려놓을 수 있다.

[0102] 로어 플레이트(113)은 플레이트 커넥터(114)를 통해 탑 플레이트(111)와 상부 프레임(112) 중 적어도 하나에 연결될 수 있다. 플레이트 커넥터(114)는 탑 플레이트(111)와 로어 플레이트(113)가 단차를 갖고 위치되게 설치될 수 있고, 로어 플레이트(113)는 플레이트 커넥터(114)에 매달려서 유지될 수 있다. 로어 플레이트(113)는 플레이트 커넥터(114)의 하부에 스크류 등의 체결부재나 후크 등의 걸이부에 의해 장착될 수 있다.

[0103] 플레이트 커넥터(114)는 복수개가 탑 플레이트(111) 하부에 배치될 수 있다. 복수개의 플레이트 커넥터(114)는 탑 플레이트(111) 하부에 좌우 방향으로 이격되게 위치될 수 있다. 복수개의 플레이트 커넥터(114)는 탑 플레이트(111)의 좌측부 아래에 배치되는 좌측 플레이트 커넥터와, 탑 플레이트(111)의 우측부 아래에 배치되는 우측 플레이트 커넥터를 포함할 수 있다.

[0104] 로어 플레이트(113)은 좌측 플레이트 커넥터와 우측 플레이터 커넥터에 연결될 수 있다.

[0105] 베이스(120)는 하부 프레임(121)을 포함할 수 있다. 하부 프레임(121)은 상판(110)과 상하 방향으로 이격되게 위치될 수 있다. 하부 프레임(121)은 복수개가 이격되게 배치될 수 있다. 복수개의 하부 프레임(121)은 상판(110)의 좌측 아래에 위치하는 좌측 하부 프레임과, 상판(110)의 우측 아래에 위치하는 우측 하부 프레임을 포함할 수 있다. 좌측 하부 프레임과 우측 하부 프레임은 좌우 방향으로 이격되게 위치될 수 있다.

[0106] 베이스(120)는 복수개의 하부 프레임을 연결하는 프레임 커넥터(123)을 더 포함할 수 있다. 좌측 하부 프레임과

우측 하부 프레임은 프레임 커넥터(123)에 의해 연결될 수 있다. 좌측 하부 프레임은 상판(110)의 아래에 전후 방향으로 길게 배치될 수 있고, 우측 하부 프레임은 상판(110)의 아래에 전후 방향으로 길게 배치될 수 있으며, 좌측 하부 프레임과 우측 하부 프레임은 좌우 방향으로 이격될 수 있다. 프레임 커넥터(123)는 좌측 하부 프레임과 우측 하부 프레임을 잇게 좌우 방향으로 길게 배치될 수 있고, 좌측부가 좌측 하부 프레임에 연결될 수 잇고, 우측부가 우측 하부 프레임에 연결될 수 있다.

[0107] 링크 기구(L)는 좌측 하부 프레임과 좌측 상부 프레임을 잇는 좌측 링크 기구와, 우측 하부 프레임과 우측 상부 프레임을 잇는 우측 링크기구를 포함할 수 있다.

[0108] 링크 기구(L)는 회동 축(150)으로 회전 가능하게 연결된 한 쌍의 링크(L1)(L2)를 포함할 수 있다. 좌측 링크 기구와 우측 링크 기구는 동일한 구조로 구성될 수 있고, 탑 플레이트(111)의 하측에 좌,우 대칭되게 배치될 수 잇다. 좌측 링크 기구와 우측 링크 기구 각각은 회동 축(150)으로 회전 가능하게 한 쌍의 링크(L1)(L2)를 포함할 수 있다.

[0109] 이하, 좌측 링크 기구와 우측 링크 기구가 동일 구조로 이루어지므로, 이하 중복된 설명을 피하기 위해 링크 기구(L)로 칭하여 설명한다.

[0110] 한 쌍의 링크(L1)(L2) 중 적어도 하나는 상판(110)의 최대 하강시 상판(110)과 베이스(120) 사이에 설정 높이의 틈(G)을 형성하는 틈 형성부(130A)(140A)를 포함할 수 있다.

[0111] 높낮이 조절 가능한 책상은 상판(110)이 베이스(120)와 접촉되지 않는 높이까지만 하강되게 구성될 수 있고, 이러한 설정 높이의 틈(G)은 사용자의 손가락 등의 신체 일부가 상판(110)과 베이스(120) 사이에 끼는 것을 막을 수 있고, 높낮이 조절 가능한 책상의 안전성은 향상될 수 있다.

[0112] 높낮이 조절 가능한 책상은 상판(110)이 소정 높이 이하로 하강될 때, 상판(110)과 베이스(120) 중 어느 하나에 설치되고 설정 높이를 갖는 별도의 스페이서가 상판(110)과 베이스(120) 중 다른 하나에 접촉되어 상판(110)과 베이스(120)가 설정 높이의 틈(G)을 형성할 수 있다. 이 경우, 상판(110)과 베이스(120) 중 어느 하나에 설치된 스페이서는 틈 형성부가 될 수 있다.

[0113] 높낮이 조절 가능한 책상은 상판의 높이가 낮아지게 한 쌍의 링크(L1)(L2)가 접혀질 때, 한 쌍의 링크(L1)(L2) 중 어느 하나에 돌출되게 구비된 돌출부가 한 쌍의 링크(L1)(L2) 중 다른 하나에 접촉되어 한 쌍의 링크(L1)(L2)가 소정 각도 미만으로 접혀지지 않게 제한할 수 있고, 상판(110)과 베이스(120)는 설정 높이의 틈(G)을 형성할 수 있다. 이 경우, 한 쌍의 링크(L1)(L2) 중 어느 하나에 돌출되게 구비된 돌출부는 틈 형성부가 될 수 있다.

[0114] 높낮이 조절 가능한 책상은 상판(110)이 소정 높이 이하로 하강될 때, 상판(110)이 자력에 의해 소정 높이 미만으로 하강되지 않게 제한하는 마그네트를 포함할 수 있다. 마그네트는 상판(110)과 베이스(120)에 서로 척력을 작용하는 방향으로 마그네트가 설치될 수 있다. 이 경우, 상판(110)과 베이스(120)에 서로 척력을 작용하게 설치된 마그네트는 틈 형성부가 될 수 있다.

[0115] 상기와 같은 틈 형성부는 상판(110)의 최대 하강시 상판(110)과 베이스(120) 사이에 설정 높이의 틈(G)을 형성할 수 있는 구조이면, 다양한 구조의 것이 적용 가능하다.

[0116] 높낮이 조절 가능한 책상은 구조가 간단하고 설정 높이의 틈을 신뢰성 높게 실현할 수 있는 틈 형성부를 갖는 것이 바람직하다.

[0117] 본 실시예는 한 쌍의 링크(L1)(L2) 자체가 상판(120)과 베이스(110) 사이에 설정 높이의 틈을 형성할 수 있는 구조로 이루어지는 것이 바람직하고, 한 쌍의 링크(L1)(L2)는 적어도 1회 절곡된 구조로 이루어질 수 있다.

[0118] 한 쌍의 링크(L1)(L2) 각각은 틈 형성부(130A)(140A)에 서로 상이한 방향으로 높이차를 갖게 돌출된 한 쌍의 링크부를 포함할 수 있다.

[0119] 한 쌍의 링크부는 상판(110)이 최대로 하강되었을 때, 둘 중 하나가 다른 하나 보다 더 높게 위치될 수 있고, 이러한 높이 차에 의해 상판(110)은 베이스(120)와 접촉되지 못하고, 상판(110)과 베이스(120)의 사이에는 설정 높이의 틈이 형성될 수 있다.

[0120] 한 쌍의 링크(L1)(L2) 각각은 틈 형성부(130A)(140A)와, 틈 형성부(130A)(140A)와 둔각을 갖고 베이스(120)와 상판(110) 중 어느 하나에 힌지 연결된 제 1 링크부(130B)(140B)와; 틈 형성부(130A)(140A)와 둔각을 갖고 베이스(120)와 상판(110) 중 다른 하나에 안내되는 이동부(169)(144)가 설치된 제 2 링크부(130C)(140C)를 포함할

수 있다.

[0121] 한 쌍의 링크(L1)(L2) 중 어느 하나(L1)는 하부 프레임(121)의 대략 전방부에 힌지 핀(130D)으로 힌지 연결된 제 1 링크부(130B)와, 상부 프레임(112)를 따라 안내되는 이동부(169)가 힌지 핀(169A)으로 힌지 연결된 제 2 링크부(130C)와, 제 1 링크부(130B)와 제 2 링크부(130C)를 잇는 틈 형성부(130A)를 포함할 수 있다.

[0122] 한 쌍의 링크(L1)(L2) 중 어느 하나(L1)는 상판(110)의 최대 하강시, 제 2 링크부(130C)가 제 1 링크부(130B)보다 더 높게 위치될 수 있다. 상판(110)은 제 2 링크부(130B)와 제 1 링크부(130B)의 높이 차 만큼 하강되지 못할 수 있다.

[0123] 한 쌍의 링크(L1)(L2) 중 어느 하나(L1)는 틈 형성부(130A)와, 제 1 링크부(130B) 및 제 2 링크부(130C)가 본 발명 제 1 실시예의 제 1 연결부재(130)로 기능할 수 있다. 그리고, 제 2 링크부(130C)에 힌지 핀(169A)으로 힌지 연결된 이동부(169)는 본 발명 제 1 실시예의 제 1 이동부(169)로 기능할 수 있다.

[0124] 한 쌍의 링크(L1)(L2) 중 다른 하나(L2)는 상부 프레임(112)의 대략 전방부에 힌지 핀(140D)으로 힌지 연결된 제 1 링크부(140B)와, 상부 프레임(112)를 따라 안내되는 이동부(144)가 힌지 핀(114A)으로 힌지 연결된 제 2 링크부(140C)와, 제 1 링크부(140B)와 제 2 링크부(140C)를 잇는 틈 형성부(140A)를 포함할 수 있다.

[0125] 한 쌍의 링크(L1)(L2) 중 다른 하나(L2)는 상판(110)의 최대 하강시, 제 2 링크부(140B)가 제 1 링크부(140B)보다 더 낮게 위치될 수 있다. 상판(110)은 제 2 링크부(140B)와 제 1 링크부(140B)의 높이 차 만큼 하강되지 못할 수 있다.

[0126] 한 쌍의 링크(L1)(L2) 중 다른 하나(L2)는 틈 형성부(140A)와, 제 1 링크부(140B) 및 제 2 링크부(140C)가 본 발명 제 1 실시예의 제 2 연결부재(140)로 기능할 수 있다. 그리고, 제 2 링크부(140C)에 힌지 핀(144A)으로 힌지 연결된 이동부(144)는 본 발명 제 1 실시예의 제 2 이동부(144)로 기능할 수 있다.

[0127] 틈 형성부(130A)(140A)에는 회동 축(150)이 회전 가능하게 관통되는 회동 축 관통공이 형성될 수 있고, 틈 형성부(130A)(140A)는 한 쌍의 링크(L1)(L2) 중 회동 축(150)이 연결되는 회동 축 연결부가 될 수 있다.

[0128] 본 실시예는 한 쌍의 링크(L1)(L2) 중 어느 하나에 피스톤 로드(182)가 연결된 높이조절기구(180)을 더 포함할 수 있다. 본 실시예의 높이조절기구(180)은 그 구성 및 기능이 본 발명 제 1 실시예의 높이조절기구와 동일하므로 그에 대한 상세한 설명은 생략한다.

[0129] 높이조절기구(180)는 피스톤 로드(182)는 한 쌍의 링크(L1)(L2) 중 어느 하나(L1)에 회전 가능하게 연결될 수 있다.

[0130] 피스톤 로드(182)는 한 쌍의 링크(L1)(L2) 중 어느 하나(L1)에 연결되는 힌지 축(182b)가 구비될 수 있고, 피스톤 로드(182)는 힌지 축(182b)을 중심으로 회전될 수 있다.

[0131] 높이조절기구(180)은 하부에 힌지 축(184b)이 구비될 수 있고, 힌지축(184b)은 한 쌍의 링크(L1)(L2) 중 다른 하나(L2)에 힌지 연결될 수 있다. 힌지 축(184b)는 높이조절기구(180)의 실린더에 구비될 수 있고, 높이조절기구(180)의 실린더는 한 쌍의 링크(L1)(L2) 중 다른 하나(L2)를 중심으로 회전될 수 있다.

[0132] 본 실시예는 본 발명 제 1 실시예와 같은 결합축(155) 없이, 높이조절기구(180)가 한 쌍의 링크 링크(L1)(L2) 중 다른 하나(L2)에 직접 연결될 수 있다. 한 쌍의 링크(L1)(L2) 중 다른 하나(L2)에는 힌지 축(184b)이 회전 가능하게 지지되는 힌지 홀(140E)가 형성될 수 있다.

[0133] 본 실시예는 상판(110)에 회전 가능하게 연결된 조작 레버(295)와; 조작 레버(295)에 연결된 케이블(미도시)과; 케이블(미도시)에 연결되고 피스톤 로드(182)가 한 쌍의 링크(L1)(L2) 중 하나(L2)에 연결된 높이조절기구(180)을 포함할 수 있다.

[0134] 조작 레버(295)는 본 발명 제 1 실시예의 버튼부(195) 대신에 설치될 수 있다. 조작 레버(295)는 상판(110)에 수평 회전축을 중심으로 회전되게 설치될 수 있고, 사용자가 조작 레버(295)를 잡고 상측으로 회동시킬 때 케이블이 작동되어 높이조절기구(180)을 조작시킬 수 있다. 본 실시예의 케이블은 본 발명 제 1 실시예의 케이블이 적용될 수 있고, 본 실시예의 높이조절기구(180)은 본 발명 제 1 실시예의 높이조절기구(180)이 적용될 수 있다. 케이블과 높이조절기구(180)은 본 발명 제 1 실시예와 동일하므로 그에 대한 상세한 설명은 생략한다.

[0135] 상판(110)에는 수평 회전축을 회전 가능하게 지지하는 수평 회전축 지지부(118)이 구비될 수 있다. 수평 회전축 지지부(118)는 탑 플레이트(111)와 상부 프레임(112)와 플레이트 커넥터(114) 중 어느 하나에 구비될 수 있다.

[0136] 한편, 상판(110)의 상부 프레임(112)는 한 쌍의 링크(L1)(L2) 중 다른 하나(L2)가 힌지 연결되는 힌지 연결부(112A)와, 한 쌍의 링크(L1)(L2) 중 어느 하나(L1)가 안내되는 가이드부(112B)가 함께 형성될 수 있고, 이를 위해 전후 방향으로 길게 형성될 수 있다. 여기서, 힌지 연결부(112A)는 본 발명 제 1 실시예의 제 2 결합부(145)와 대응되는 구성일 수 있고, 가이드부(112B)는 본 발명 제 1 실시예의 제 1 이동 프레임(165)와 대응되는 구성일 수 있다. 본 실시예의 하부 프레임(112)은 힌지 연결부(112A)와, 가이드부(112B)가 별도의 부재로 구성되는 경우 보다 부품수를 최소화할 수 있다.

[0137] 베이스(120)의 하부 프레임(121)은 한 쌍의 링크(L1)(L2) 중 어느 하나(L1)가 힌지 연결되는 힌지 연결부(121A)와, 한 쌍의 링크(L1)(L2) 중 다른 하나(L2)가 안내되는 가이드부(121B)가 함께 형성될 수 있고, 이를 위해 전후 방향으로 길게 형성될 수 있다. 여기서, 힌지 연결부(121A)는 본 발명 제 1 실시예의 제 1 결합부(160)와 대응되는 구성일 수 있고, 가이드부(121B)는 본 발명 제 1 실시예의 제 2 이동 프레임(170)와 대응되는 구성일 수 있다. 본 실시예의 하부 프레임(121)은 힌지 연결부(121A)와, 가이드부(121B)가 별도의 부재로 구성되는 경우 보다 부품수를 최소화할 수 있다.

[0138] 본 실시예의 작용을 설명하면 다음과 같다.

[0139] 먼저, 사용자는 조작 레버(295)를 손으로 잡고 상측 방향으로 올릴 수 있고, 조작 레버(295)는 수평 회전축 지지부(118)에 지지된 수평 회전축을 중심으로 상측 방향으로 회전될 수 있다. 조작 레버(295)의 회전시, 조작 레버(295)에 연결된 케이블은 높이조절기구(180)에 외력을 전달할 수 있고, 높이조절기구(180) 내부의 피스톤 로드(182)에는 가스의 압력이 작용할 수 있으며, 높이조절기구(180)는 피스톤 로드(182)가 상판(110)을 상승시키는 방향으로 전진될 수 있다.

[0140] 상기와 같이, 상판(110)이 들어올려질 때, 제 1 링크(L1)의 이동부(169)는 상부 프레임(112)를 따라 상부 프레임(112)의 전방 방향으로 이동될 수 있고, 제 1 링크(L1)은 하부 프레임(121)의 힌지 연결부(121A)를 중심으로 상측 방향으로 점차 세워질 수 있다.

[0141] 그리고, 상판(110)이 들어올려질 때, 제 2 링크(L2)의 이동부(144)는 하부 프레임(121)을 따라 하부 프레임(121)의 전방 방향으로 이동될 수 있고, 제 2 링크(L2)는 상부 프레임(112)의 힌지 연결부(112A)를 중심으로 회전되면서 점차 세워질 수 있다.

[0142] 상기와 같은 제 1 링크(L1)과 제 2 링크(L2)의 회전시, 제 1 링크(L1)과 제 2 링크(L2)는 제 1 링크(L1)의 틈 형성부(130A)와 제 2 링크(L2)의 틈 형성부(140B)가 회동 축(150)으로 연결된 상태에서 펼쳐질 수 있고, 상판(110)은 제 1 링크(L1)와 제 2 링크(L2)에 지지된 상태에서 상측 방향으로 상승될 수 있다.

[0143] 상기와 같은 상판(110)의 상승시, 제 2 링크(L2)의 제 1 링크부(140B)는 제 1 링크(L1)의 제 1 링크부(130B)보다 높게 상승될 수 있고, 제 1 링크(L2)의 제 2 링크부(130C)는 제 2 링크(L2)의 제 2 링크부(140C) 보다 높게 상승될 수 있다.

[0144] 제 2 링크(L2)의 제 1 링크부(140B)와 제 1 링크(L1)의 제 1 링크부(130B)의 사이의 각도가 커질 때, 제 1 링크(L2)의 제 2 링크부(130C)와 제 2 링크(L2)의 제 2 링크부(140C) 사이의 각도는 커질 수 있고, 상판(110)의 높이는 높아질 수 있다.

[0145] 한편, 사용자는 상판(110)이 희망하는 높이에 이르면, 상판(110)을 더 이상 들어올리지 않고, 조작 레버(295)에 가하던 외력을 제거할 수 있다. 조작 레버(295)는 외력이 제거됨에 따라 수평 회전축을 중심으로 하측 방향으로 회전될 수 있다. 조작 레버(295)의 하측 방향 회전시, 케이블에 작용하는 외력은 해제되고, 피스톤 로드(182)의 위치는 고정된다.

[0146] 피스톤 로드(182)의 위치 고정시, 높이조절기구(180)은 제 1 링크(L1)와 제 2 링크(L2) 중 힌지 연결된 링크(L2)에 지지될 수 있고, 피스톤 로드(182)는 상판(110)을 지탱하여 상판(110)이 임의 하강되는 것을 막을 수 있다.

[0147] 사용자는 상판(110)이 도 17에 도시된 바와 같이, 상승되어 고정된 상태에서, 높낮이 조절 가능한 책상을 사용할 수 있다.

[0148] 사용자는 상판(110)의 높이를 낮추고자 할 경우, 조작 레버(295)를 손으로 잡고 상측 방향으로 다시 올릴 수 있고, 조작 레버(295)는 수평 회전축 지지부(118)에 지지된 수평 회전축을 중심으로 상측 방향으로 회전될 수 있다. 조작 레버(295)의 회전시, 조작 레버(295)에 연결된 케이블은 높이조절기구(180)에 외력을 전달할 수 있고, 높이조절기구(180) 내부의 피스톤 로드(182)에는 가스의 압력이 작용할 수 있으며, 높이조절기구(180)은 피스톤

로드(182)가 상판(110)을 하강시키는 방향으로 직선 이동 가능한 상태가 될 수 있다.

[0149] 사용자가 상기와 같이, 조작 레버(295)를 상측 방향으로 회전시킨 상태에서 상판(110)을 내릴 수 있고, 높이조절기구(180)의 피스톤 로드(182)는 높이조절기구(180) 내부를 향하는 방향으로 후퇴될 수 있다.

[0150] 상기와 같이, 상판(110)이 내려질 때, 제 1 링크(L1)의 이동부(169)는 상부 프레임(112)를 따라 상부 프레임(112)의 후방 방향으로 이동될 수 있고, 제 1 링크(L1)은 하부 프레임(121)의 힌지 연결부(121A)를 중심으로 하측 방향으로 회전될 수 있다.

[0151] 그리고, 상판(110)이 내려질 때, 제 2 링크(L2)의 이동부(144)는 하부 프레임(121)을 따라 하부 프레임(121)의 후방 방향으로 이동될 수 있고, 제 2 링크(L2)는 상부 프레임(112)의 힌지 연결부(112A)를 중심으로 하측 방향으로 회전될 수 있다.

[0152] 상기와 같은 제 1 링크(L1)과 제 2 링크(L2)의 회전시, 제 1 링크(L1)과 제 2 링크(L2)는 제 1 링크(L1)의 틈 형성부(130A)와 제 2 링크(L2)의 틈 형성부(140B)가 회동 축(150)으로 연결된 상태에서 접혀질 수 있고, 상판(110)은 제 1 링크(L1)와 제 2 링크(L2)에 지지된 상태에서 하측 방향으로 하강될 수 있다.

[0153] 상기와 같은 상판(110)의 하강시, 제 2 링크(L2)의 제 1 링크부(140B)는 제 1 링크(L1)의 제 1 링크부(130B)와 근접하게 하강될 수 있고, 제 1 링크(L2)의 제 2 링크부(130C)는 제 2 링크(L2)의 제 2 링크부(140C)와 근접하게 하강될 수 있다.

[0154] 제 2 링크(L2)의 제 1 링크부(140B)와 제 1 링크(L1)의 제 1 링크부(130B)의 사이의 각도가 작아질 때, 제 1 링크(L2)의 제 2 링크부(130C)와 제 2 링크(L2)의 제 2 링크부(140C) 사이의 각도는 작아질 수 있고, 상판(110)의 높이는 낮아질 수 있다.

[0155] 상기와 같은 상판(110)의 하강시, 제 1 링크(L1)와 제 2 링크(L2)는 제 1 링크부와 틈 형성부와 제 2 링크부의 절곡 구조에 의해 도 18과 같이 상판(110)과 베이스(120)의 사이에 설정 높이의 틈(G)이 형성되는 위치에 정지될 수 있고, 상판(110)는 베이스(120)와 설정 높이의 틈(G)을 형성하는 위치까지만 하강될 수 있다. 상판(110)과 베이스(120) 사이에 설정 높이의 틈(G)이 형성되는 경우, 상판(110)과 베이스(120) 사이에 사용자의 손가락이 끼이는 것을 막을 수 있고, 상판(110)과 베이스(120) 사이에 사용자의 손가락이 끼이는 안전사고를 예방할 수 있다.

[0156] 한편, 사용자는 상판(110)이 베이스(120)와 설정 높이의 틈(G)을 형성하는 높이로 하강되고, 더 이상 하강되지 않으면, 조작 레버(295)에 가하던 외력을 제거할 수 있다. 조작 레버(295)는 외력이 제거됨에 따라 수평 회전축을 중심으로 하측 방향으로 회전될 수 있다. 조작 레버(295)의 하측 방향 회전시, 케이블에 작용하는 외력은 해제되고, 피스톤 로드(182)의 위치는 고정되며, 상판(110)은 도 18에 도시된 바와 같이, 베이스(120)와 설정 높이의 틈(G)을 형성하는 높이에 위치 고정될 수 있다.

[0157] 도 19은 본 발명의 제 6 실시예의 상판이 스토퍼에 의해 상승 제한될 때의 단면도이고, 도 20은 본 발명의 제 6 실시예의 상판이 스토퍼에 의해 하강 제한될 때의 단면도이다.

[0158] 본 실시예는 하부 프레임(121)에 한 쌍의 링크(L1)(L2) 중 하나(L2)가 걸리는 스토퍼(500)가 설치될 수 있다. 스토퍼(500)는 한 쌍의 링크(L1)(L2) 중 하나의 이동 경로(P1부터 P2까지) 상에 위치 가변되게 설치될 수 있다. 본 실시예는 스토퍼(500) 이외의 구성 및 작용이 본 발명 제 1 실시예 내지 제 5 실시예 중 어느 하나와 동일하거나 유사하고, 그에 대한 상세한 설명은 생략한다. 편의를 위해 제 5 실시예와 동일한 구성에 대해서 제 5 실시예와 동일 도면부호를 사용하고 그에 대한 상세한 설명은 생략한다.

[0159] 스토퍼(500)가 설치되지 않을 경우, 한 쌍의 링크(L1)(L2) 중 하나의 이동부(144)는 하부 프레임(121)의 이동 경로(P1부터 P2까지)를 따라 전후 안내될 수 있다.

[0160] 스토퍼(500)가 설치되지 않을 경우, 이동부(144)는 전방 방향(F)으로 최대 전진되는 위치인 최전방 위치(P1)와, 후방 방향(R)로 최대 후퇴되는 위치인 최후방 위치(P2)로 이동될 수 있다.

[0161] 스토퍼(500)는 이동부(144)가 최전방 위치(P1)를 향해 전진될 때, 도 19에 도시된 바와 같이, 이동부(144)가 최전방 위치(P1)로 도달되기 이전에 구속되게 하부 프레임(121)에 설치될 수 있고, 최전방 위치(P1)를 향해 전진되던 이동부(144)는 스토퍼(500)에 전방 방향(F)으로 걸려 더 이상 전방 방향으로 전진되지 못할 수 있다.

[0162] 반대로, 스토퍼(500)는 이동부(144)가 최후방 위치(P2)를 향해 후퇴될 때, 도 20에 도시된 바와 같이, 이동부(144)가 최후방 위치(P2)로 도달되기 이전에 구속되게 하부 프레임(121)에 설치될 수 있고, 최후방 위치(P2)를

향해 후퇴되던 이동부(144)는 스토퍼(500)에 후방 방향(R)으로 걸려 더 이상 후방 방향으로 후퇴되지 못할 수 있다.

[0163] 스토퍼(500)는 이동부(144)의 이동 방향으로 이동부(144)의 전방과 후방에 설치될 수 있고, 그 설치 위치에 따라 이동부(144)의 실제 이동 경로를 가변시킬 수 있다.

[0164] 이동부(144)의 이동 가능 경로는 최전방 위치(P1)와 최후방 위치(P2) 사이인데, 스토퍼(500)가 도 19과 같이, 최전방 위치(P1) 보다 후방인 위치에 이동부(144) 보다 전방에 위치되게 설치되면, 이동부(144)의 실제 이동 가능 경로는 스토퍼(500)의 후단인 위치(P3)와 최후방 위치(P2)의 사이일 수 있고, 스토퍼(500)가 도 20과 같이, 최후방 위치(P2) 보다 전방인 위치에 이동부(144) 보다 후방에 위치되게 설치되면, 이동부(144)의 실제 이동 가능 경로는 스토퍼(500)의 선단인 위치(P4)와 최전방 위치(P1)의 사이일 수 있다.

[0165] 높낮이 조절 가능한 책상은 스토퍼(500)에 의해 상판(110)의 최대 상승 높이를 스토퍼(500)가 설치되지 않는 경우 보다 낮게 제한할 수 있고, 상판(110)의 최대 하강 높이를 스토퍼(500)가 설치되지 않는 경우 보다 높게 제한할 수 있다.

[0166] 한편, 스토퍼(500)는 이동부(144)를 제한하는 것에 의해 이동부(144)가 하부 프레임(121)을 따라 미끄러지는 것을 방지할 수 있고, 높이조절기구(180)과 함께 높낮이 조절 가능한 책상 높이를 유지시키는 기능을 할 수 있다.

[0167] 스토퍼(500)는 그 설치 위치를 용이하게 변경할 수 있는 구조로 이루어지는 것이 바람직하고, 베이스(120)의 외부에서 손으로 잡기 용이한 구조로 이루어지는 것이 바람직하다.

[0168] 스토퍼(500)는 이동부(144)의 이동 경로(P1부터 P2까지)에 위치되어 이동부(144)와 접촉되고 이동부(144)를 구속하는 이동부 접촉부재(502)를 포함할 수 있다. 스토퍼(500)는 사용자가 손으로 잡고 돌일 수 있는 손잡이부재(504)를 더 포함할 수 있다. 손잡이부재(504)는 이동부 접촉부재(502)와 분리 가능하게 결합될 수 있고, 하부 프레임(121)의 외부에 위치될 수 있게 이동부 접촉부재(502)와 결합될 수 있다. 스토퍼(500)는 손잡이부재(504)와 이동부 접촉부재(502)를 연결하는 연결부재(506)을 더 포함할 수 있다. 연결부재(506)는 손잡이부재(504)와 이동부 접촉부재(502) 중 어느 하나에 돌출되게 장착되거나 일체로 돌출되게 형성될 수 있고, 이 경우 손잡이부재(504)와 이동부 접촉부재(502) 중 다른 하나에는 연결부재(506)의 적어도 일부가 내삽되는 연결부재 결합공이 형성될 수 있다. 연결부재(506)는 연결부재 결합공에 끼움되어 결합되는 것이 가능하고, 나사 결합되는 것도 가능함은 물론이다.

[0169] 연결부재(506)는 손잡이부재(504)와 이동부 접촉부재(502) 중 어느 하나에 수평 방향으로 돌출되게 배치될 수 있다.

[0170] 한편, 하부 프레임(121)에는 연결부재(506)가 관통될 수 있는 슬릿(121C)가 형성될 수 있다. 슬릿(121C)은 하부 프레임(121)에 전후 방향으로 길게 형성될 수 있고, 연결부재(506)는 슬릿(121C)의 선단(121D)과 슬릿(121C)의 후단(121E) 사이의 소정 위치에 위치될 수 있다.

[0171] 도 21은 본 발명의 제 7 실시예에 따른 높낮이 조절 가능한 책상의 후방측 사시도이고, 도 22은 본 발명의 제 7 실시예의 수평 유지부가 확대 도시된 사시도이다.

[0172] 본 실시예의 높낮이 조절 가능한 책상은 베이스(120); 상판(110)과; 베이스(120)와 상판(110) 사이에 배치되어 상판(110)을 승강 가능하게 지지하는 링크 기구(L)를 포함할 수 있고, 링크 기구(L)는 베이스(120)와 상판(110) 중 어느 하나에 힌지 연결됨과 아울러 베이스(120)와 상판(110) 중 다른 하나에 안내되어 상판(110)을 승강시키고 좌우 방향으로 이격된 좌측 링크와 우측 링크와, 상판(110)이 수평을 유지하면서 승강되도록 좌측 링크와 우측 링크가 서로 평행을 유지하면서 동작되게 연결된 수평유지부(600)를 포함할 수 있다.

[0173] 본 실시예는 수평유지부(600) 이외의 기타 구성이 본 발명 제 1 실시예 내지 제 6 실시예 중 하나와 동일하거나 유사할 수 있고, 동일한 구성에 대해서는 동일 부호를 사용하고 그에 대한 상세한 설명은 생략한다. 편의를 위해 제 5 실시예 및 제 6 실시예와 동일한 구성에 대해서는 제 5 실시예 및 제 6 실시예와 동일 도면부호를 사용하고 그에 대한 상세한 설명은 생략한다.

[0174] 좌측 링크와 우측 링크 각각은 베이스(120)와 상판(110) 중 어느 하나에 힌지 연결된 연결부재(140)와, 연결부재(140)에 회전 가능하게 연결되어 베이스(120)와 상판(110) 중 다른 하나에 안내되는 이동부(144)를 포함할 수 있다.

[0175] 본 실시예의 좌측 링크는 본 발명 제 5 실시예의 한 쌍의 제 2 링크(L2) 중 좌측에 위치하는 링크일 수 있고,

이하, 설명의 편의를 위해, 본 발명 제 5 실시예와 상이한 도면부호인 L21을 사용하여 설명한다.

[0176] 본 실시예의 우측 링크는 본 발명 제 5 실시예의 한 쌍의 제 2 링크(L2) 중 우측에 위치하는 링크일 수 있고, 이하, 설명의 편의를 위해, 본 발명 제 5 실시예와 상이한 도면부호인 L22를 사용하여 설명한다.

[0177] 수평 유지부(600)는 이동부(144)와 커플러(602)로 연결된 평행축(610)을 포함할 수 있다. 평행축(610)은 좌측 링크(L21)와 우측 링크(L22) 사이에 수평 방향으로 길게 위치될 수 있다. 평행축(610)은 좌측 링크(L21)의 하단과 우측 링크(L22)의 하단 사이의 거리 보다 짧게 형성될 수 있다. 커플러(602)는 평행축(610)의 좌측과 연결되는 좌측 커플러와, 평행축(610)의 우측과 연결되는 우측 커플러를 포함할 수 있다. 평행축(610)은 좌측 링크(L21)의 이동부(144)와, 우측 링크(L22)의 이동부(144)를 연결하는 이동부 커넥터일 수 있고, 좌측 링크(L21)의 이동부(144)와 우측 링크(L22)의 이동부(144)와 함께 회전되면서 좌측 링크(L21)의 이동부(144)와 우측 링크(L22)의 이동부(144) 중 어느 하나가 다른 하나 보다 빠르게 회전되면서 안내되는 것을 막을 수 있다.

[0178] 평행축(610)의 좌측단은 좌측 링크(L21)의 우측에 위치하는 좌측 커플러와 연결될 수 있고, 평행축(610)의 우측단은 우측 링크(L22)의 좌측에 위치하는 우측 커플러에 연결될 수 있다. 높낮이 조절 가능한 책상은 좌우 방향으로 좌측 링크(L21)와, 좌측 커플러와, 평행축(610)과, 우측 커플러와, 우측 링크(L22)의 순서일 수 있다.

[0179] 좌측 링크(L21)의 이동부(144)와 우측 링크(L22)의 이동부(144)에는 회전 축(149A)이 돌출될 수 있다.

[0180] 좌측 링크(L21)의 이동부(144)에 돌출된 회전 축(149A)은 좌측 링크(L21)의 연결부재(140)을 관통하여 좌측 커플러에 연결될 수 있고, 우측 링크(L22)의 이동부(144)에 돌출된 회전 축(149A)은 우측 링크(L22)의 연결부재(140)을 관통하여 우측 커플러에 연결될 수 있다.

[0181] 좌측 링크(L21)의 이동부(144)와 우측 링크(L22)의 이동부(144) 중 어느 하나가 회전되면, 좌측 링크(L21)의 이동부(144)와 우측 링크(L22)의 이동부(144)는 커플러(602) 및 평행축(610)에 의해 일체로 회전될 수 있고, 좌측 링크(L21)의 이동부(144)와 우측 링크(L22)의 이동부(144)는 동일 속도로 회전되게 유도될 수 있다.

[0182] 좌측 링크(L21)의 이동부(144)와 우측 링크(L22)의 이동부(144)가 서로 상이한 속도로 회전될 경우, 좌측 링크(L21)의 이동부(144)와 우측 링크(L22)의 이동부(144)는 전후 방향의 위치가 서로 상이할 수 있고, 이 경우 상판(110)은 좌우 중 일측으로 편심되게 쏠리면서 기울어질 수 있다.

[0183] 한편, 상기와 같이, 좌측 링크(L21)의 이동부(144)와 우측 링크(L22)의 이동부(144)가 평행축(610)에 의해 일체로 동일 속도로 회전되면, 상판(110)은 전체적으로 수평을 유지하면서 승강될 수 있다.

[0184] 수평유지부(600)는 좌측 링크(L21) 및 우측 링크(L22)에 각각 연결된 링크 커넥터(142)를 포함할 수 있다. 링크 커넥터(142)는 좌측 링크(L21) 및 우측 링크(L22)가 일체로 동작되게 좌측 링크(L21)의 연결부재와 우측 링크(L22)의 연결부재를 연결할 수 있다.

[0185] 수평유지부(600)는 이동부(144)와 함께 회전하도록 결합되는 피니언 기어(149B)와, 피니언 기어(149B)가 전후 방향으로 이동되게 치합된 랙 기어(121F)를 포함할 수 있다. 여기서, 상기 커플러(602) 내에는 상기 피니언 기어의 회전을 저지하는 완충부, 예를 들어 오일 등이 봉입된 완충수단 등이 구비될 수 있고, 이를 통해서 상기 이동부의 이동 또는 유동을 일정 수준 내에서 저지할 수 있게 된다. 이로 인해서, 상기 상판이 보다 안정적으로 지지될 수 있게 된다.

[0186] 랙 기어(121F)는 이동부(144)가 안내되는 베이스(120) 또는 상판(110)에 형성될 수 있다.

[0187] 랙 기어(121F)는 하부 프레임(121)에 전후 방향으로 길게 형성될 수 있고, 이동부(144)는 하부 프레임(121) 내부에 랙 기어(121F)를 따라 전후 방향으로 회전되게 위치될 수 있다. 피니언 기어(149B)와 랙 기어(121F)는 이동부(144)의 회전시 이동부(144)가 옆 방향으로 뒤틀리는 것을 막을 수 있고, 이동부(144)는 흔들림이 최소화되면서 전후 방향으로만 진퇴될 수 있다.

[0188] 이동부(144)가 랙 기어(121F)를 따라 회전될 때, 피니언 기어(149B)와 랙 기어(121F)는 이동부(144)의 옆 방향으로 뒤틀리는 것을 방지하면서 이동부(144)가 보다 부드럽게 회전되는 것을 도울 수 있다. 상판(110)은 전체적으로 부드럽게 승강될 수 있다.

[0189] 수평유지부(600)는 링크 커넥터(142), 피니언 기어(149B) 및 랙 기어(121F) 없이, 평행축(610)가 단독으로 상판(110)의 수평을 유지시키는 것이 가능하다.

[0190] 수평유지부(600)는 링크 커넥터(142) 없이, 평행축(610), 피니언 기어(149B) 및 랙 기어(121F)의 조합으로 구성

되어 상판(110)의 수평을 유지시키는 것이 가능하다. 이 경우, 상판(110)은 흔들림 없이 보다 안정적으로 수평을 유지하면서 승강 동작될 수 있다.

[0191] 수평유지부(600)는 평행축(610), 피니언 기어(149B) 및 랙 기어(121F) 없이, 링크 커넥터(142)가 단독으로 상판(110)의 수평을 유지시키는 것이 가능하다.

[0192] 수평유지부(600)는 평행축(610) 없이, 링크 커넥터(142), 피니언 기어(149B) 및 랙 기어(121F)의 조합으로 구성되어 상판(110)의 수평을 유지시키는 것이 가능하다. 이 경우, 상판(110)은 흔들림 없이 보다 안정적으로 수평을 유지하면서 승강 동작될 수 있다.

[0193] 수평유지부(600)는 평행축(610)과, 링크 커넥터(142), 링크 커넥터(142), 피니언 기어(149B) 및 랙 기어(121F)의 조합으로 구성되어 상판(110)의 수평을 유지시키는 것이 가능하다. 이 경우, 상판(110)은 가장 안정적으로 수평을 유지하면서 승강 동작될 수 있다.

[0194] 도 23은 본 발명의 제 8 실시예의 높낮이 조절 가능한 책상이 도시된 사시도이다.

[0195] 본 실시예는 베이스(120); 상판(110)과; 베이스(120)와 상판(110) 사이에 배치되어 상판(110)을 승강 가능하게 지지하는 링크 기구(L)를 포함하고, 링크 기구(L)는 베이스(120)와 상판(110) 사이에 전후 방향으로 이격되고 서로 평행하게 배치된 한 쌍의 링크(L3)(L4)를 포함한다. 본 실시예는 베이스(120)에 회전 가능하게 연결되고 한 쌍의 링크(L3)(L4) 중 하나에 피스톤 로드(182)가 연결된 높이조절기구(180)을 더 포함할 수 있다.

[0196] 본 실시예는 베이스(120)의 좌측부와 상판(110)의 좌측부 사이의 좌측 한 쌍의 링크와, 좌측 한 쌍의 링크 중 어느 하나에 피스톤 로드가 연결된 좌측 높이조절기구를 포함할 수 있다. 본 실시예는 베이스(120)의 우측부와 상판(110)의 우측부 사이의 우측 한 쌍의 링크를 포함할 수 있고, 우측 한 쌍의 링크 중 어느 하나에 피스톤 로드가 연결된 우측 높이조절기구를 포함할 수 있다.

[0197] 한 쌍의 링크(L3)(L4)와 높이조절기구(180)는 두 셋트가 베이스(120)와 상판(110) 사이에 좌우 방향으로 이격되게 배치될 수 있다.

[0198] 베이스(120)는 하부 프레임을 포함할 수 있다. 베이스(120)는 좌측 하부 프레임과 우측 하부 프레임을 포함할 수 있고, 좌측 하부 프레임과 우측 하부 프레임은 프레임 커넥터(123)으로 연결될 수 있다.

[0199] 좌측 하부 프레임과 우측 하부 프레임은 그 각각이 전후 방향으로 길게 배치될 수 있고, 서로 평행하게 배치될 수 있다. 좌측 하부 프레임과 우측 하부 프레임은 좌,우 대칭되는 구조이고, 이하 동일한 구성에 대해서는 하부 프레임으로 칭하여 설명한다.

[0200] 하부 프레임은 전후 방향으로 길게 형성된 하판부(121G)와, 한 쌍의 링크(L3)(L4) 각각이 연결된 로어 연결부(121J)와, 높이조절기구(180)이 힌지 연결된 높이조절기구 연결부(121K)를 포함할 수 있다.

[0201] 로어 연결부(121J)는 하판부(121G)의 전방부에 수직하게 절곡 형성될 수 있다. 그리고, 높이조절기구 연결부(121K는 하판부(121G)의 후방부 또는 프레임 커넥터(123)에 수직하게 절곡 형성될 수 있다.

[0202] 상판(110)는 상부 프레임을 포함할 수 있다. 상부 프레임은 상판(110) 중 탑 플레이트(111) 아래에 배치되게 설치될 수 있다. 상부 프레임은 한 쌍의 링크(L3)(L4) 각각이 연결된 어퍼 연결부(112G)를 포함할 수 있다.

[0203] 한 쌍의 링크(L3)(L4)는 하부가 로어 연결부(121J)에 서로 이격되게 연결될 수 있다. 한 쌍의 링크(L3)(L4)는 하부가 로어 연결부(121J)에 서로 상이한 힌지축을 중심으로 회전 가능하게 연결될 수 있다. 한 쌍의 링크(L3)(L4)는 상부가 어퍼 연결부(112G)에 연결될 수 있다. 한 쌍의 링크(L3)(L4)는 상부가 어퍼 연결부(112G)에 서로 상이한 힌지축을 중심으로 회전 가능하게 연결될 수 있다.

[0204] 한 쌍의 링크(L3)(L4)는 상판(110)의 승강시 상판(110)을 따라 동일한 기울기로 회전되면서 상판(110)을 안내할 수 있다.

[0205] 높이조절기구(180)은 하부가 높이조절기구 연결부(121K)에 힌지 연결될 수 있고, 피스톤 로드(182)가 한 쌍의 링크(L3)(L4) 중 하나에 힌지 연결될 수 있다. 높이조절기구(180)는 상판(110)의 상승시 대략 전방 상측을 향하는 방향으로 경사지게 배치되면서 피스톤 로드(182)가 한 쌍의 링크(L3)(L4) 중 하나를 향하는 방향으로 전진될 수 있다.

[0206] 높이조절기구(180)은 상판(110)의 하강시 피스톤 로드(182)가 대략 수평한 방향으로 배치되면서 피스톤 로드(182)가 높이조절기구(180)의 내부로 삽입되는 방향으로 후퇴될 수 있다.

[0207] 본 실시예는 본 발명 제 5 실시예와 같이, 조작 레버(295)의 조작시 높이조절기구(180)이 작동되면서 상판(110)의 위치를 유지시킬 수 있다.

[0208] 도 24은 본 발명의 제 9 실시예의 높낮이 조절 가능한 책상이 도시된 사시도이다.

[0209] 본 실시예는 본 발명 제 8 실시예와 링크 기구(L)가 동일할 수 있고, 높이조절기구(189)이 상판(110)에 회전 가능하게 연결됨과 아울러 한 쌍의 링크(L3)(L4) 중 하나에 피스톤 로드(182)가 연결되며, 높이조절기구(180)의 연결 대상 이외의 기타 구성 및 작용은 본 발명 제 8 실시예와 동일하거나 유사하므로 동일 부호를 사용하고 그에 대한 상세한 설명은 생략한다.

[0210] 본 실시예는 높이조절기구(180)이 힌지 연결되는 구조가 상판(110)에 구비될 수 있다. 상판(110)에는 높이조절기구(180)이 힌지 연결되는 높이조절기구 연결부(112K)가 설치될 수 있다.

[0211] 높이조절기구(180)은 상판(110)의 상승시 대략 후방 하측을 향하는 방향으로 경사지게 배치되면서 피스톤 로드(182)가 한 쌍의 링크(L3)(L4) 중 하나를 향하는 방향으로 돌출될 수 있다.

[0212] 높이조절기구(180)은 상판(110)의 하강시 피스톤 로드(182)가 대략 수평한 방향으로 배치되면서 피스톤 로드(182)가 높이조절기구(180)의 내부로 삽입되는 방향으로 이동될 수 있다.

[0213] 본 실시예는 본 발명 제 5 실시예와 같이, 조작 레버(295)의 조작시 높이조절기구(180)이 작동되면서 상판(110)의 위치를 유지시킬 수 있다.

[0214] 도 25은 본 발명의 제 10 실시예의 높낮이 조절 가능한 책상이 도시된 사시도이다.

[0215] 본 실시예는 본 발명 제 8 실시예와 링크 기구(L)가 동일할 수 있고, 높이조절기구(189)이 높이조절기구(180)이 한 쌍의 링크(L3)(L4) 중 어느 하나에 회전 가능하게 연결되고, 한 쌍의 링크(L3)(L4) 중 다른 하나에 피스톤 로드(182)가 연결되며, 높이조절기구(180)의 연결 대상 이외의 기타 구성 및 작용은 본 발명 제 8 실시예와 동일하거나 유사하므로 동일 부호를 사용하고 그에 대한 상세한 설명은 생략한다.

[0216] 높이조절기구(180)은 한 쌍의 링크(L3)(L4) 중 어느 하나에 힌지 연결될 수 있고, 피스톤 로드(182)가 한 쌍의 링크(L3)(L4) 중 다른 하나에 힌지 연결될 수 있다.

[0217] 높이조절기구(180)은 상판(110)의 상승시 한 쌍의 링크(L3)(L4) 중 어느 하나와 함께 상승되면서 대략 상측을 향하는 방향으로 길게 배치될 수 있고, 이때 피스톤 로드(182)가 한 쌍의 링크(L3)(L4) 중 다른 하나를 향하는 방향으로 전진될 수 있다.

[0218] 높이조절기구(180)은 상판(110)의 하강시 한 쌍의 링크(L3)(L4) 중 어느 하나와 함께 대략 수평한 방향으로 배치되면서 피스톤 로드(182)가 높이조절기구(180)의 내부로 삽입되는 방향으로 후퇴될 수 있다.

[0219] 본 실시예는 본 발명 제 5 실시예와 같이, 조작 레버(295)의 조작시 높이조절기구(180)이 작동되면서 상판(110)의 위치를 유지시킬 수 있다.

[0220] 도 26은 본 발명의 제 11 실시예의 높낮이 조절 가능한 책상이 도시된 사시도이다.

[0221] 본 실시예의 높낮이 조절 가능한 책상은 베이스(120)을 지지하는 고정다리(200)를 더 포함할 수 있다. 베이스(120)는 고정다리(200) 상측에 올려지게 설치될 수 있고, 고정다리(200)에 고정될 수 있다.

[0222] 베이스(120)는 고정다리(200)에 의해 지면으로부터 이격되게 위치될 수 있다. 베이스(120)는 고정다리(200)에 스크류 등의 체결부재나 후크 등의 걸이부에 의해 고정될 수 있다.

[0223] 고정다리(200)는 높이 조절 가능한 책상의 일부 구성이 될 수 있고, 하부 프레임 또는 레그로 기능할 수 있다. 본 실시예는 고정 다리(200)가 베이스(120), 상판(110) 및 링크기구(L)와 함께 높낮이 조절 가능한 책상을 구성할 수 있고, 이 경우 높낮이 조절 가능한 책상은 일종의 테이블 책상이 될 수 있다.

[0224] 도 27은 본 발명의 제 12 실시예의 높낮이 조절 가능한 책상의 상판이 상승되었을 때의 사시도이고, 도 28은 본 발명의 제 12 실시예의 높낮이 조절 가능한 책상의 상판이 하강되었을 때의 사시도이다.

[0225] 본 실시예의 높낮이 조절 가능한 책상(100)은 식탁으로 사용될 수 있다. 높낮이 조절 가능한 책상(100)은 상판(110)에 하측에 설치되어 링크 기구(L)의 좌측을 덮는 좌측 안전 커버(710)와 상판(110)의 하측에 링크 기구(L)의 우측을 덮는 우측 안전 커버(720)을 더 포함할 수 있다.

[0226] 좌측 안전 커버(710) 및 우측 안전 커버(720) 각각은 그 상단이 상판(110)에 스크류 등의 체결부재나 후크 등의

걸이부에 의해 고정될 수 있다.

[0227] 좌측 안전 커버(710) 및 우측 안전 커버(720) 각각의 높이는 링크기구(L)가 최대로 펼쳐졌을 때의 링크기구(L) 높이 보다 높게 형성될 수 있다. 좌측 안전 커버(710) 및 우측 안전 커버(720) 각각은 베이스(120)와 고정다리(200)의 경계 옆을 덮는 높이로 형성될 수 있다.

[0228] 좌측 안전 커버(710) 및 우측 안전 커버(720)는 상판(110)의 하강시, 상판(110)과 함께 하강될 수 있다.

[0229] 좌측 안전 커버(710)는 유아 등의 사용자 손이 좌측 안전 커버(710) 좌측에서 한 쌍의 링크 사이로 진입되지 않게 막을 수 있고, 우측 안전 커버(720)는 유아 등의 사용자 손이 우측 안전 커버(720) 우측에서 한 쌍의 링크 사이로 진입되지 않게 막을 수 있으며, 높낮이 조절 가능한 책상(100)의 안전성은 향상될 수 있다.

[0230] 본 실시예는 베이스(120), 상판(110), 링크기구(L) 등의 기타 구성 및 작용이 본 발명 제 5 실시예 내지 제 10 실시예 중 어느 하나와 동일하거나 유사하므로 동일 부호를 사용하고 그에 대한 상세한 설명은 생략한다.

[0231] 도 29는 본 발명의 제 13 실시예의 높낮이 조절 가능한 책상이 도시된 사시도이고, 도 30은 본 발명의 제 13 실시예의 높낮이 조절 가능한 책상이 도시된 측면도이다.

[0232] 높낮이 조절 가능한 책상(100)은 고정 다리(200)와; 고정 다리(200) 상측에 배치된 베이스(120); 베이스(120)와 이격된 상판(110)과; 베이스(120) 및 상판(110)에 연결되어 상판(110)을 승강 가능하게 지지하는 링크 기구(L)를 포함할 수 있고, 상판(110)은 탑 플레이트(111)와; 탑 플레이트(111) 상측에 배치되고 탑 플레이트(111) 보다 크기가 작은 보조 받침대(113')를 포함할 수 있다.

[0233] 보조 받침대(113')는 복수개의 수직판(113A)과, 복수개의 수직판(113A) 상측에 탑 플레이트(111)와 나란하게 배치된 수평판(113B)을 포함할 수 있다.

[0234] 사용자는 보조 받침대(130') 상측에 모니터(M)나 각종 책 등을 올려 놓을 수 있고, 사용자는 가장 이상적인 각도, 예를 들면 목이 편안한 각도로 모니터를 바라볼 수 있게 상판(110)의 높이를 조절할 수 있다.

[0235] 도 30을 참조하면, 사용자의 눈(E)부터 모니터(M)의 중앙으로의 하향 경사진 각도는 눈(E) 아래 방향으로 20도 내지 30도 가 적정할 수 있고, 사용자는 상판(110) 높이를 조절하는 것에 의해 모니터(M) 높이를 조절할 수 있고, 사용자가 앉는 의자 높이만을 조절할 때 보다, 눈(E)이 모니터(M)를 주시하는 각도(X)를 보다 다양하게 가변할 수 있다.

[0236] 한편, 상기 도 29 및 도 30에 도시된 제13 실시예에서 상기 탑 플레이트(111)와 보조 받침대(113')는 반드시 도시된 형태로 국한되는 것은 아니며 임의의 형태를 갖도록 할 수 있다. 도 31은 상기 제13 실시예에서의 탑 플레이트 및 보조 받침대를 도 16에 도시된 실시예의 것으로 대체한 형태를 도시한 것이다. 따라서, 도 31에 도시된 예는 기본적으로 상기 탑 플레이트 및 보조 받침대를 제외한 나머지 구성요소는 상기 제13 실시예의 것과 동일하다.

[0237] 도시된 바와 같이, 상기 탑 플레이트는 전면측에 오목부(113A)가 형성된다. 상기 오목부(113A)는 사용자의 배 부분과 대향하는 부분으로서, 이로 인해서 사용자는 모니터 등이 거치될 수 있는 보조 받침대에 보다 가깝게 접근할 수 있게 된다. 아울러, 상기 탑 플레이트의 양측에는 날개부(113B)가 배치된다. 상기 날개부(113B)는 상기 탑 플레이트에 의해 제공되는 수납 공간을 좌우로 확장시키며, 탑 플레이트와는 소정 간격을 두고 이격되도록 배치된다.

[0238] 상기 간격은 링크 기구 또는 프레임 등이 통과할 수 있는 공간을 제공하여, 상기 책상의 최소 높이를 더욱 작게 할 수 있다.

[0239] 상기 보조 받침대는 평면도 상으로 대략 'ㄷ'자 형태를 갖는다. 이로 인해서, 상기 보조 받침대의 양측 단부(111A)는 상기 탑 플레이트의 전면부를 향하여 돌출된 형태를 갖게 되고, 상기 돌출된 부분은 상기 탑 플레이트와 날개부 사이의 간극을 덮어 보다 미려한 외관을 갖도록 할 뿐만 아니라 보조 받침대의 수납 공간을 확장시키는 역할도 겸하게 된다.

[0240] 이상 제 1 실시예 내지 제 13 실시예의 따른 높낮이 조절 가능한 책상에 대하여 설명하였지만 당업자는 상기 제 1 실시예 내지 제 13 실시예를 적절하게 조합할 수 있으며, 이러한 조합도 본 발명의 보호범위에 속한다.

부호의 설명

[0241] 110: 상판 112: 상부 프레임

120: 베이스 121: 하부 프레임

130,140: 연결부재 130A, 140A: 틈 형성부

130B, 140B: 제 1 링크부 130C,140C: 제 2 링크부

144: 이동부 169: 이동부

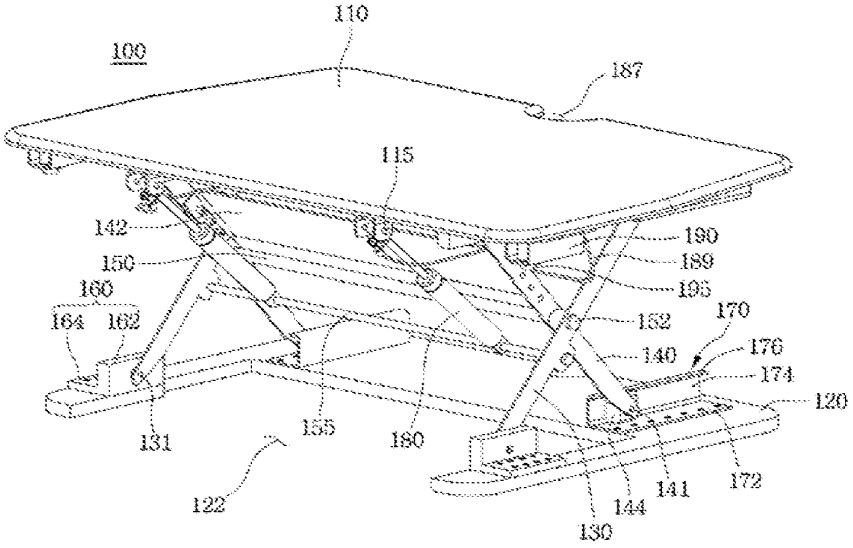
180: 높이조절기구 182: 피스톤 로드

295: 조작 레버 500: 스토퍼

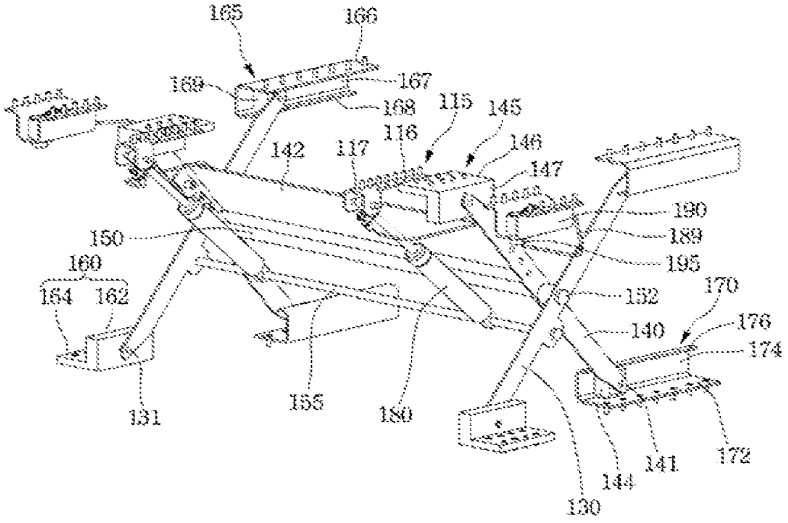
L: 링크 기구 L1,L2: 링크

도면

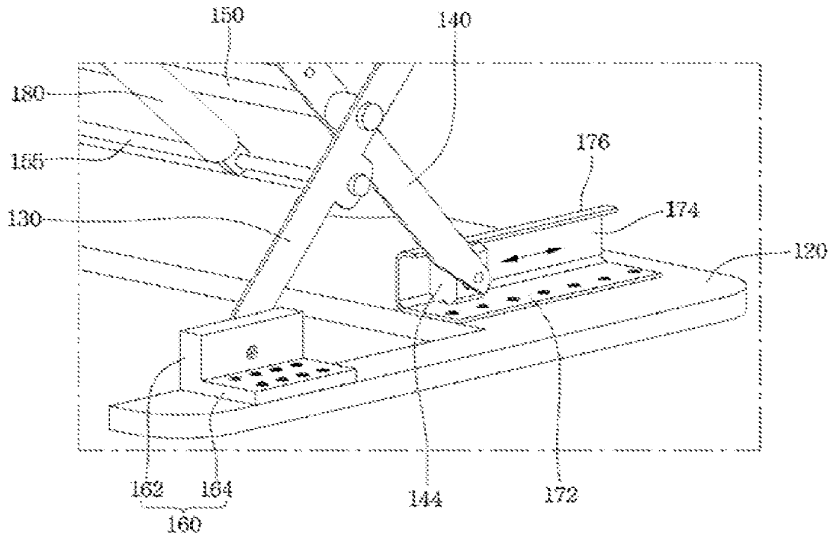
도면1



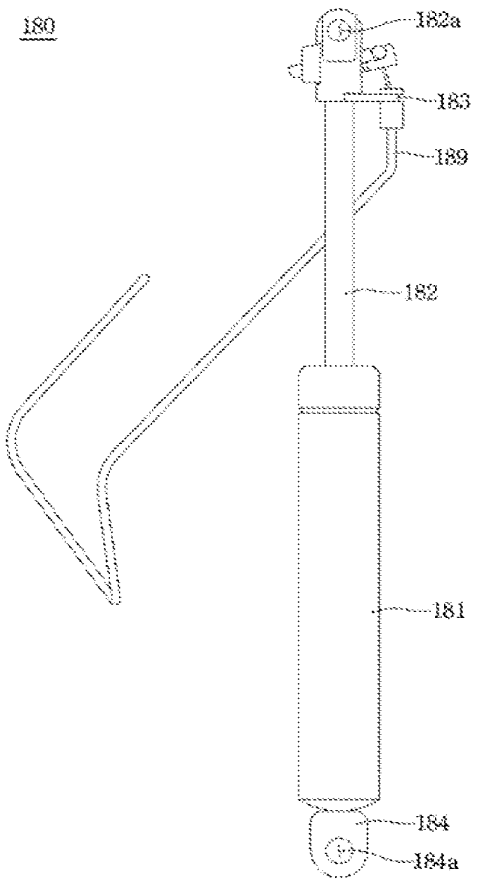
도면2



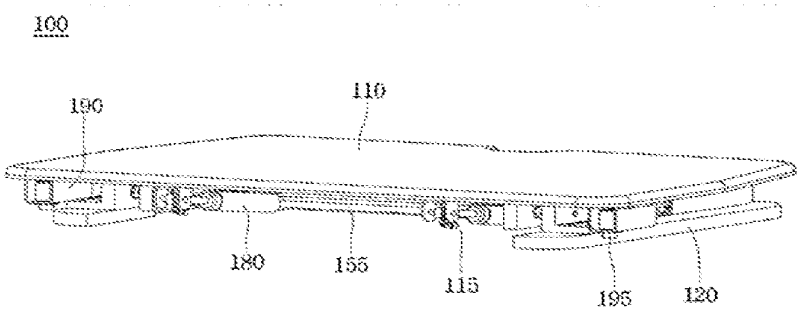
도면3


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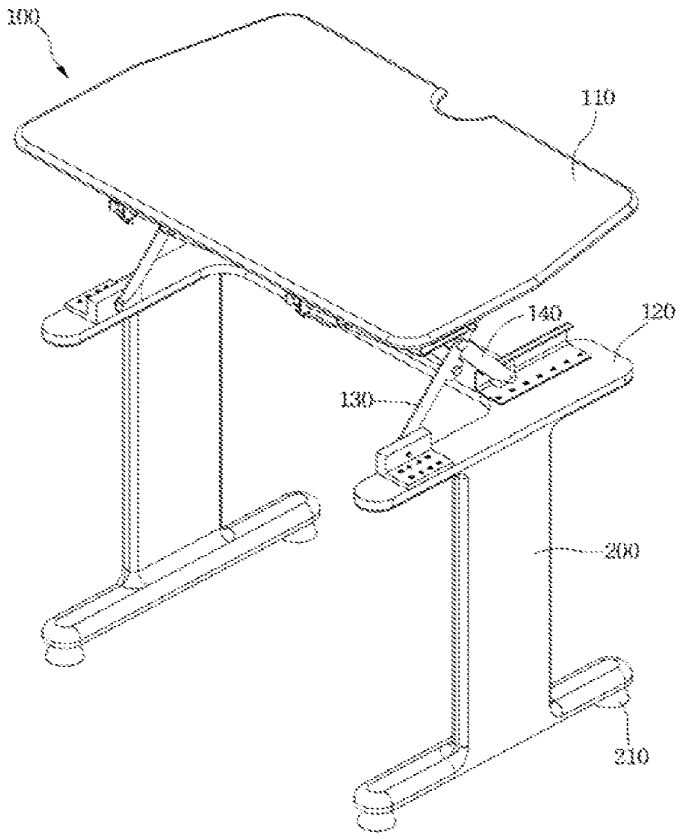
도면4


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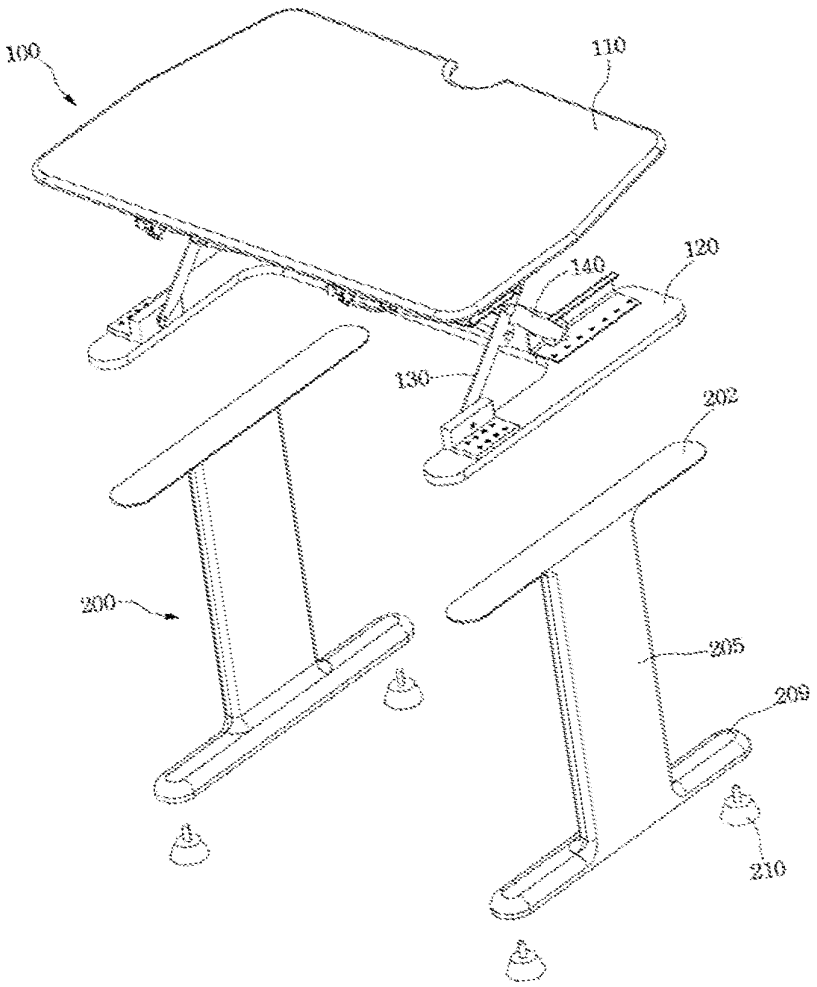
도면5



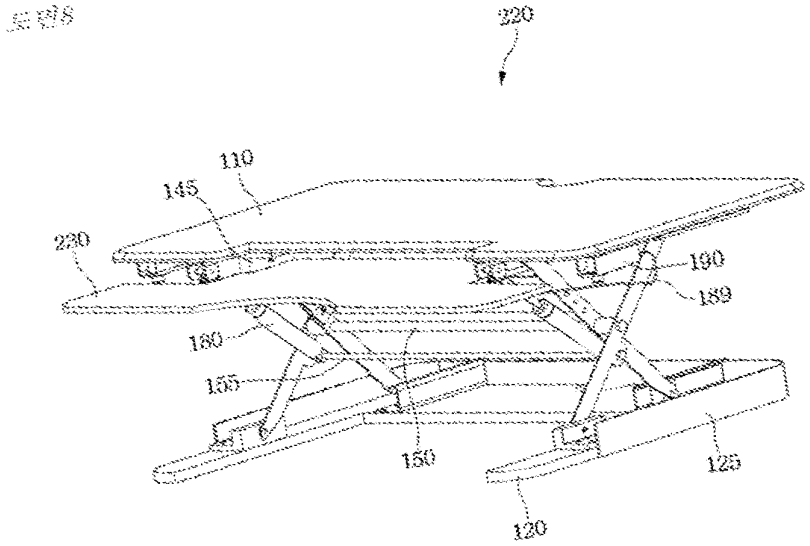
도면6



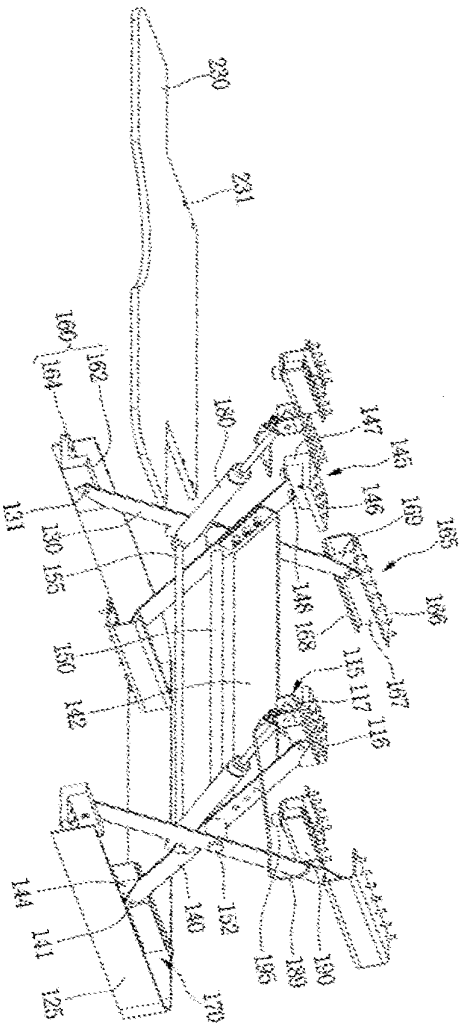
도면7


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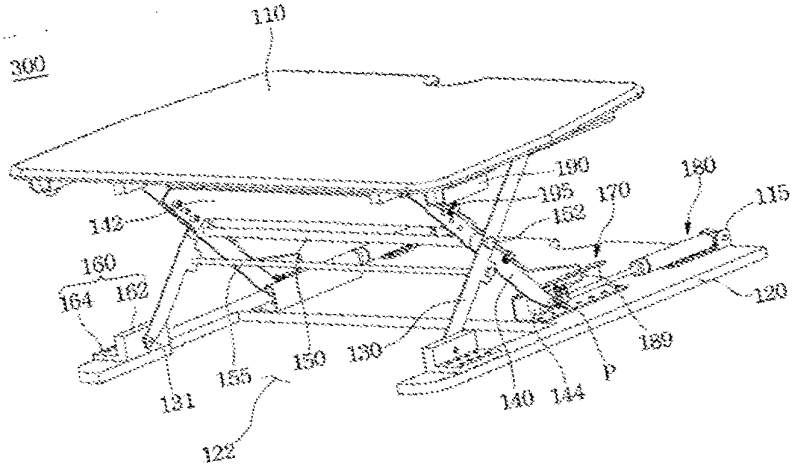
도면8


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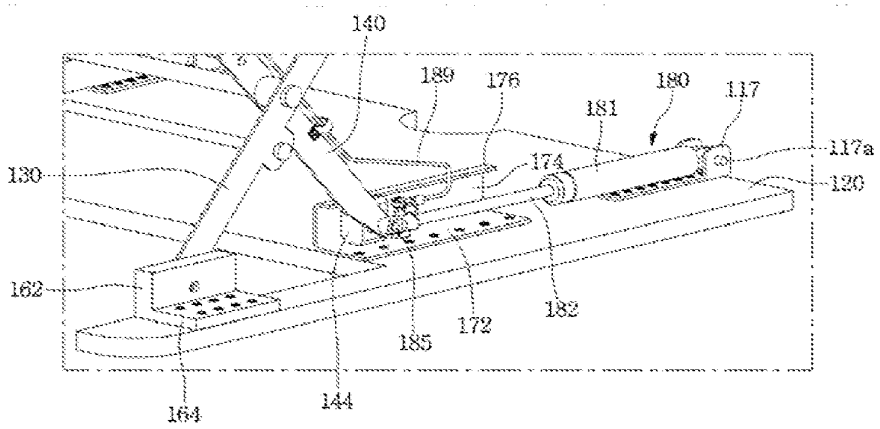
도면9


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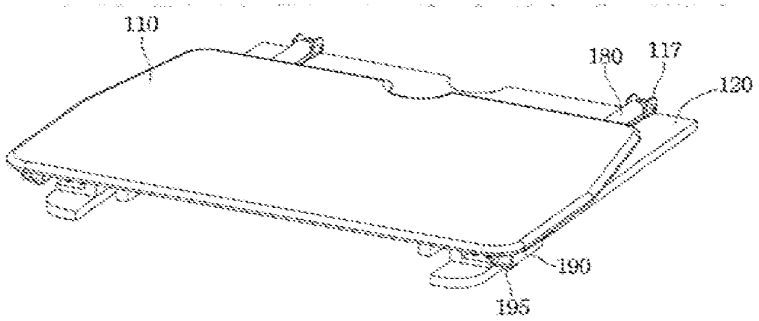
도면10


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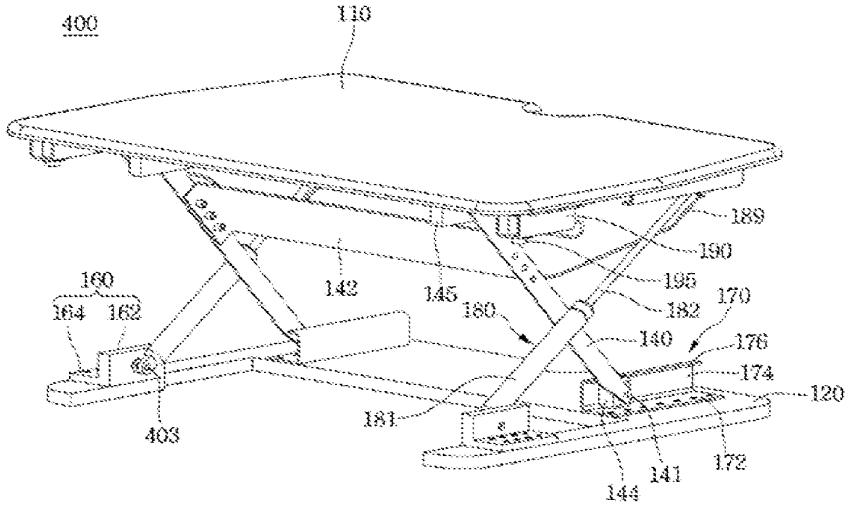
도면11



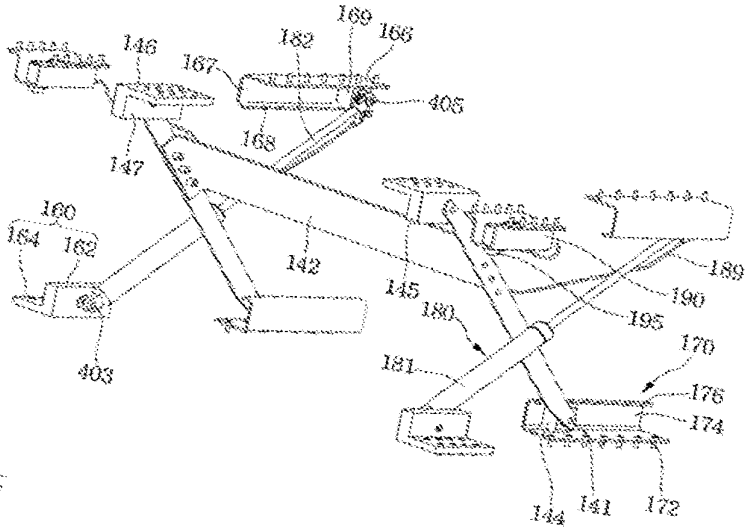
도면12



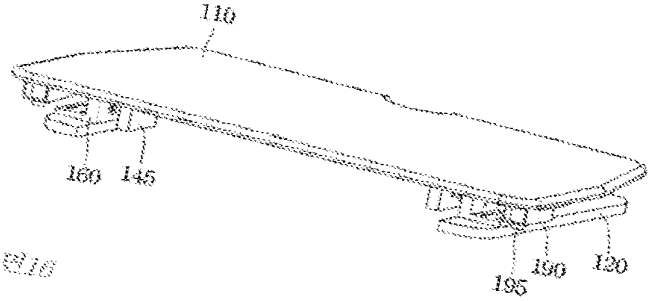
도면13



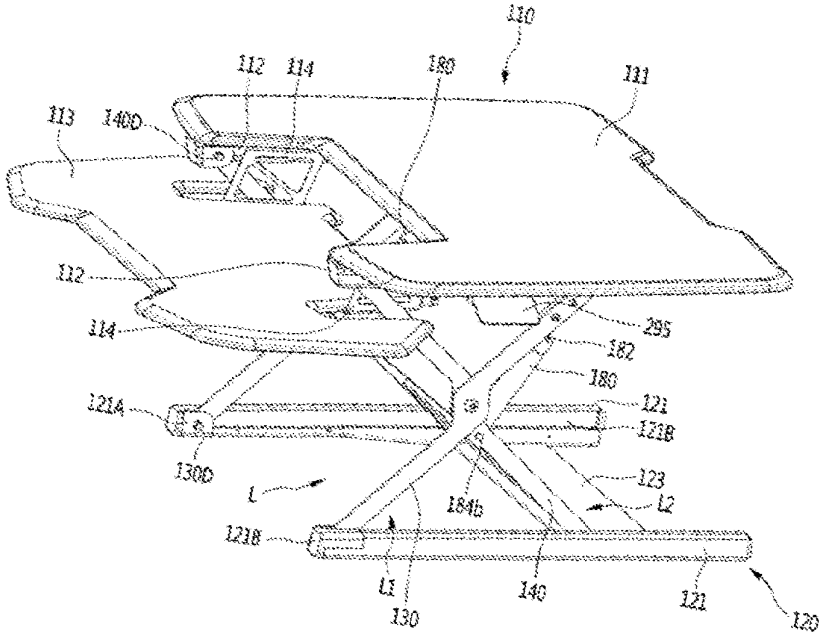
도면14



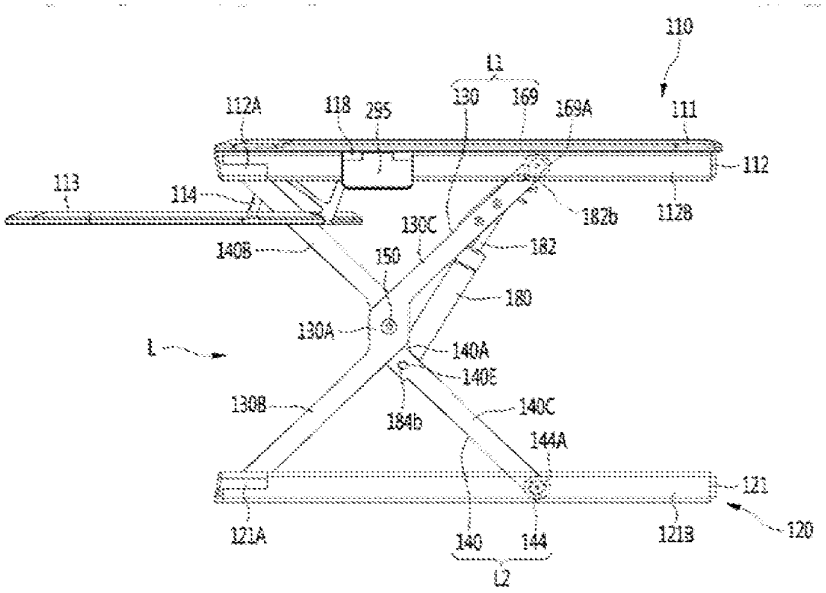
도면15



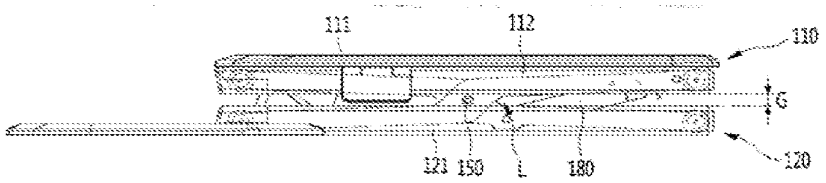
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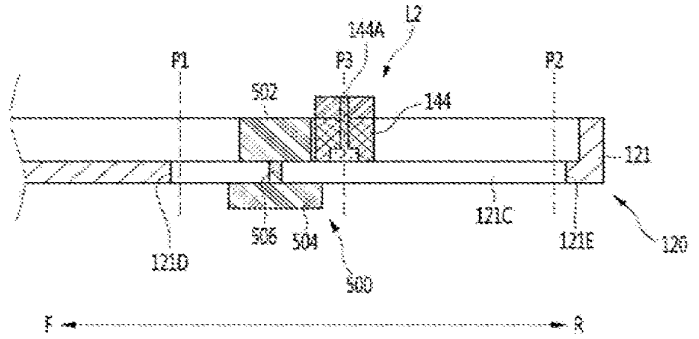
도면17



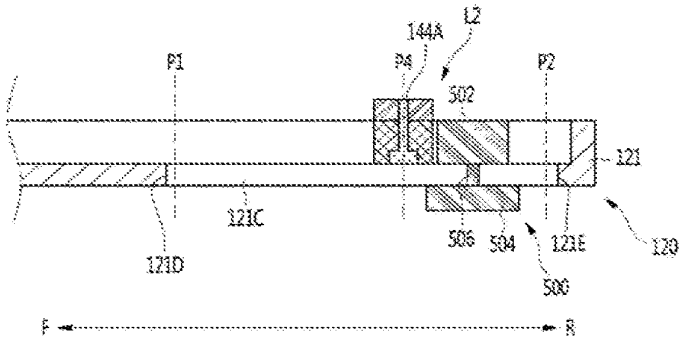
도면18



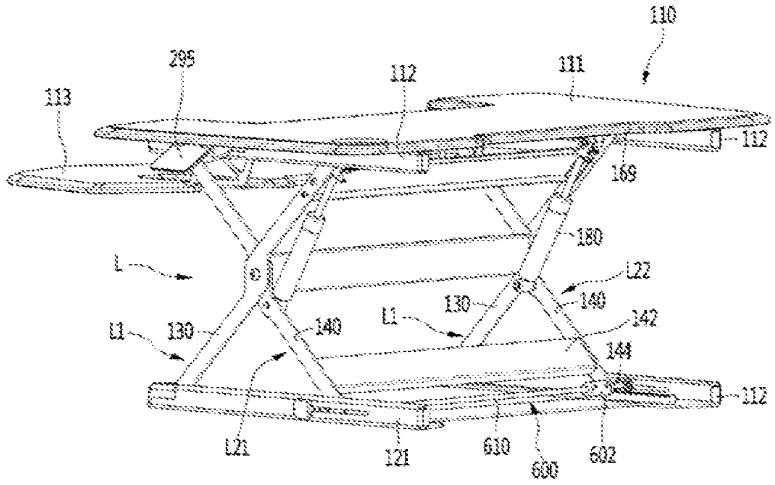
도면19



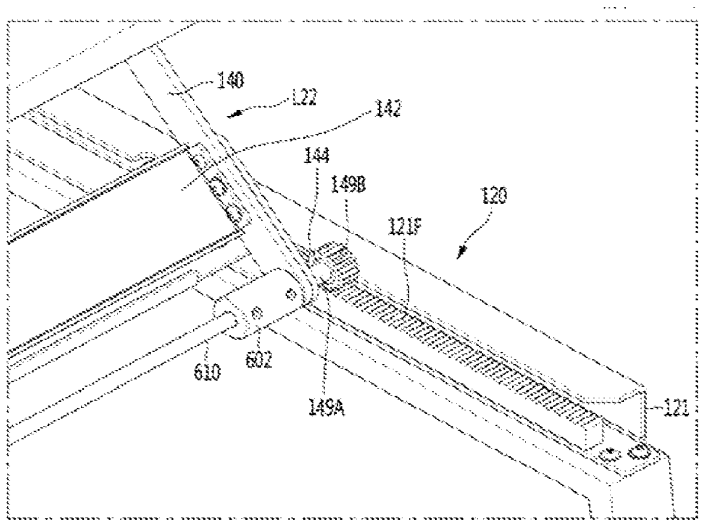
도면20



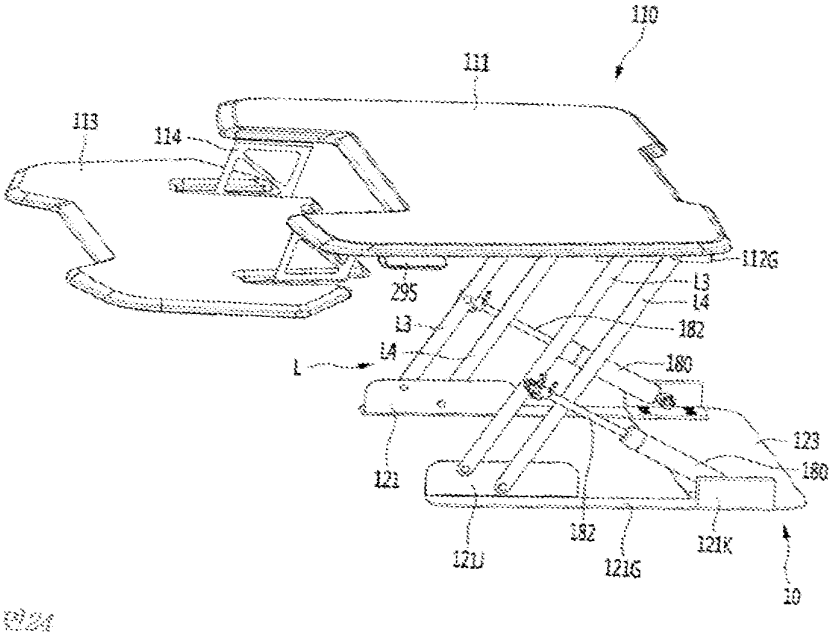
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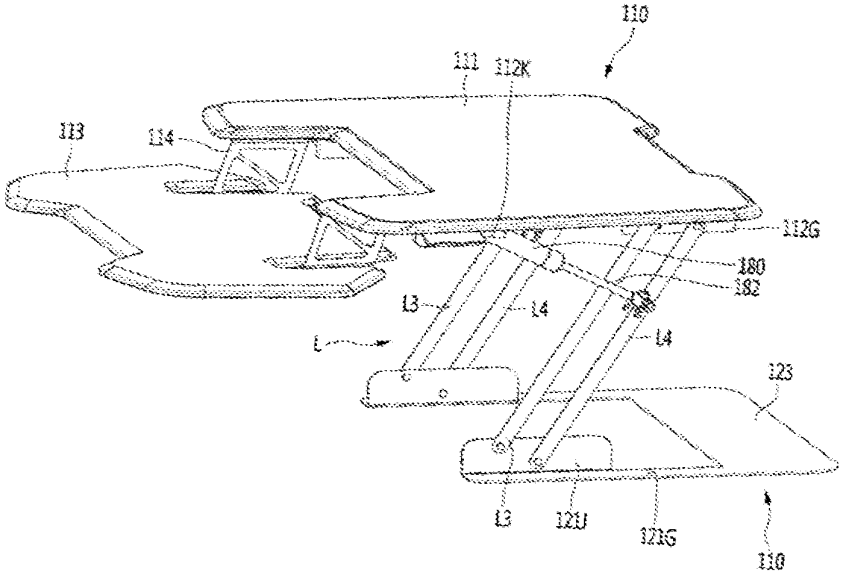
도면22



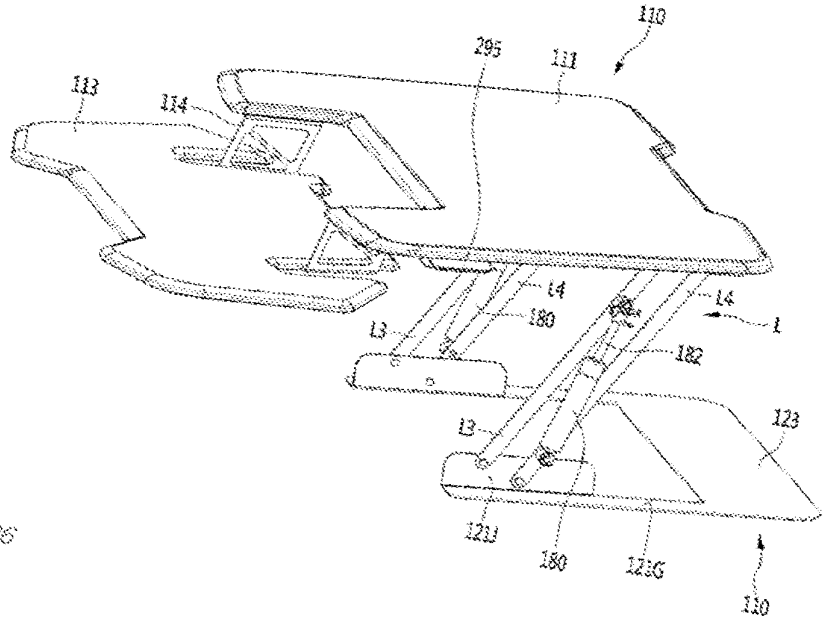
도면23


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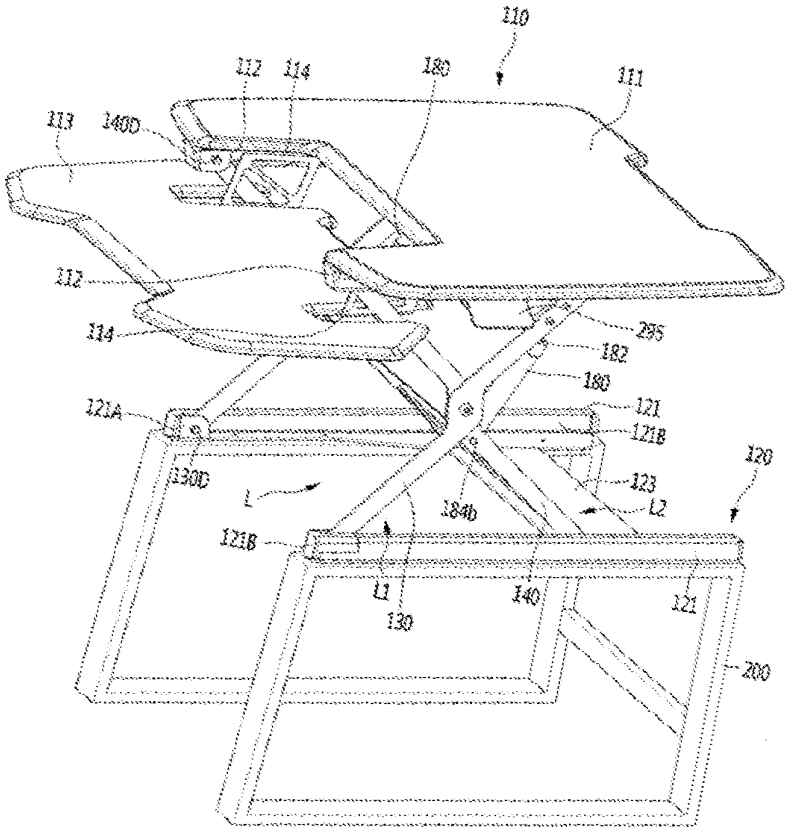
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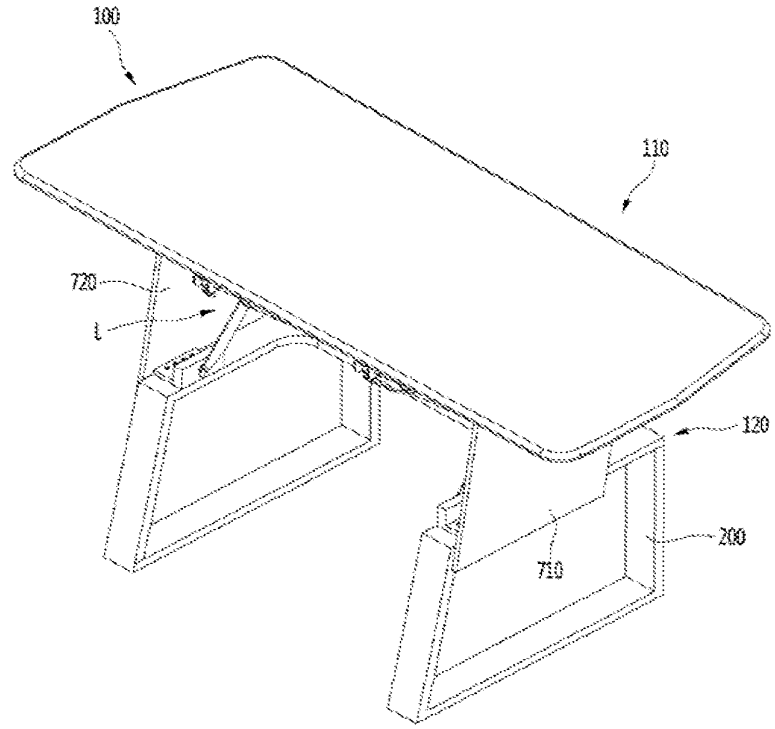
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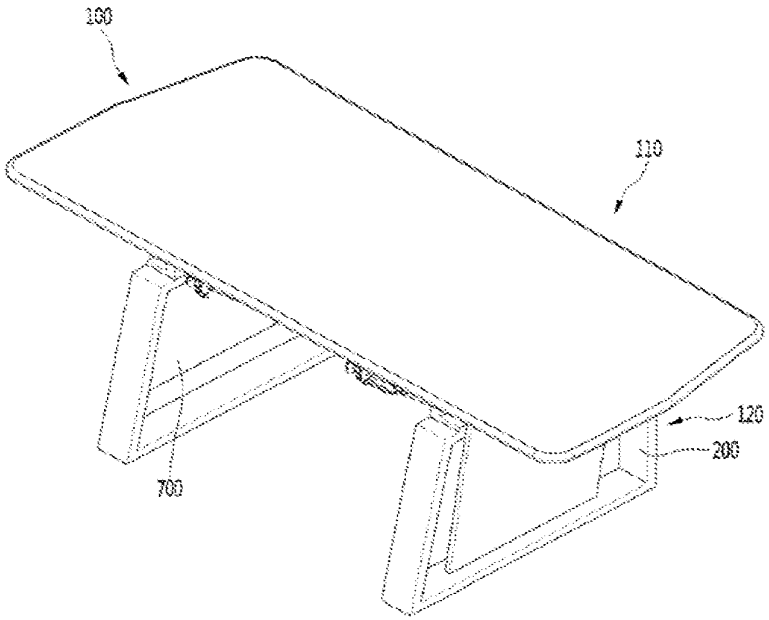
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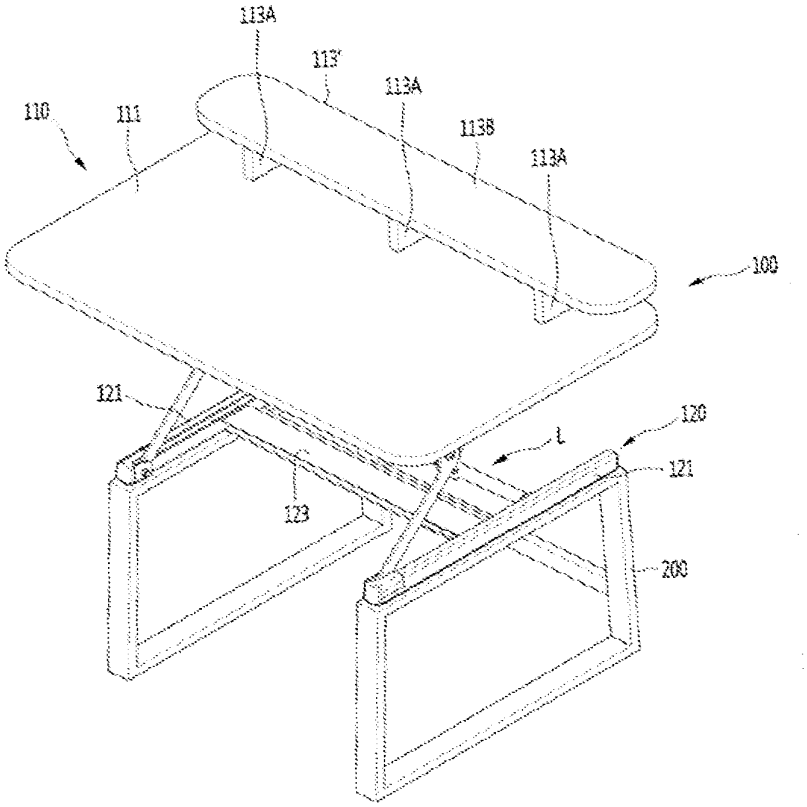
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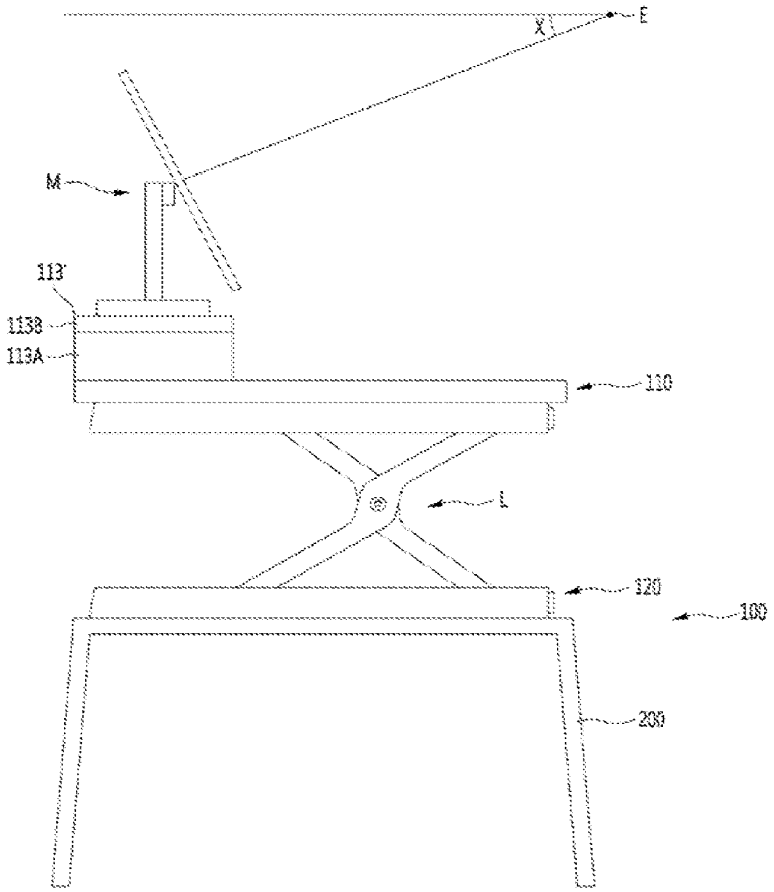
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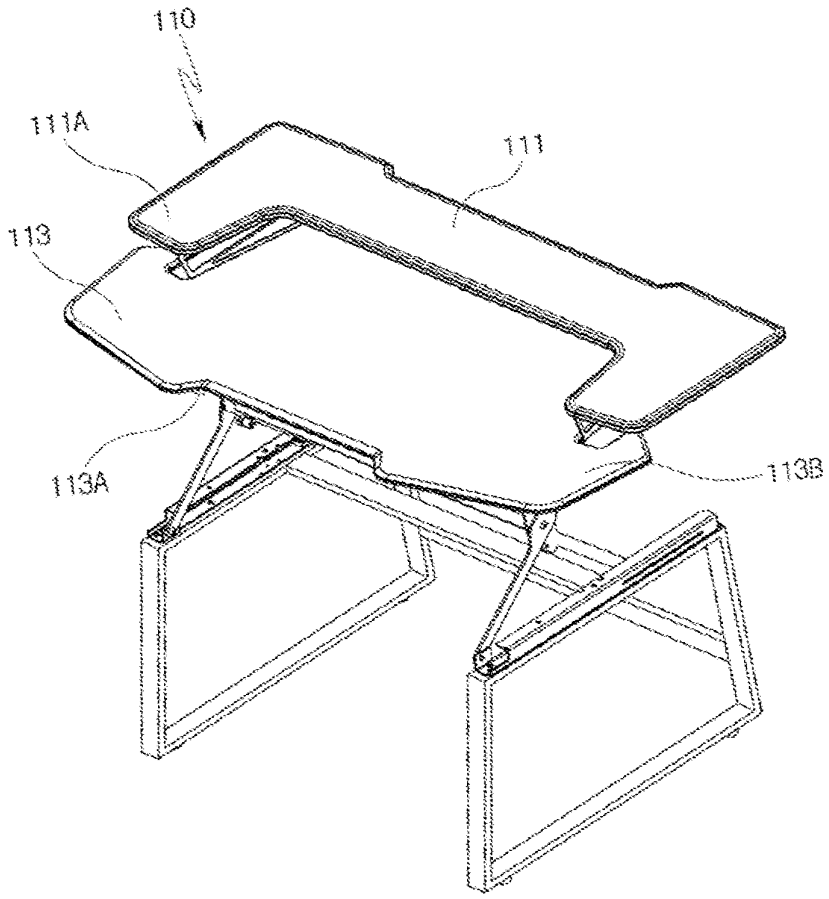
도면29



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도면21



【심사관 직권보정사항】

【직권보정 1】

【보정항목】 청구범위

【보정세부항목】 청구항 4

【변경전】

단부은

【변경후】

단부는

CLAIMS

What is claimed is:

1. A desktop workspace that adjusts vertically, comprising:

a work surface platform;

a slidable tray selectively positionable between a stored position under the work surface platform and an extended position that is outward and lowered with respect to the work surface platform,

a base configured to sit on an existing platform; and

a height adjustment mechanism connecting the work surface platform and the base, the height adjustment mechanism including:

a set of pivot arms that connect at a scissoring pivot point creating a scissoring motion when raising and lowering the work surface platform to various heights;

a base pivot point fixed relative to the base and connecting the base and the set of pivot arms;

a platform pivot point fixed relative to the work surface platform and connecting the work surface platform and the set of pivot arms;

a sliding mechanism on an end of an arm of the set of pivot arms between the end of the arm and either the work surface platform or the base; and

a gas spring that assists in elevation of the work surface platform by applying a force to rotate one of the set of pivot arms as part of the scissoring motion.

2. The desktop workspace of claim 1,

wherein the set of pivot arms is a first set of pivot arms, the desktop workspace further comprising:

a second set of pivot arms; and

an element that connects the first set of pivot arms to the second set of pivot arms.

3. The desktop workspace of claim 1,

wherein the work surface platform forms an upper work surface, and

wherein the gas spring is completely covered by a profile of the work surface platform when viewed from above the upper work surface relative to the base, the profile of the work surface platform being defined by an outer perimeter of the upper work surface.

4. The desktop workspace of claim 1, wherein one end of the gas spring is fixed to the work surface platform.

5. The desktop workspace of claim 1, wherein the gas spring is a first spring, the desktop workspace comprising a pair of springs attached to the height adjustment mechanism to assist in the elevation of the work surface platform, the pair of springs including the first spring and a second spring.

6. The desktop workspace of claim 1, wherein the gas spring, the set of pivot arms, the base pivot point, and the platform pivot point align side-by-side when the desktop workspace is in a fully lowered position such that the desktop workspace adjusts vertically.

7. The desktop workspace of claim 1, wherein the sliding mechanism is a first sliding mechanism, the desktop workspace further comprising a second sliding mechanism, wherein either the first sliding mechanism or the second sliding mechanism is attached or slides along the work surface platform, and the other of the first sliding mechanism and the second sliding mechanism is attached to or slides along the base.

8. The desktop workspace of claim 1, wherein the scissoring motion when raising and lowering the work surface platform to various heights of the height adjustment mechanism moves the work surface platform in a straight vertical direction relative to the base.

9. The desktop workspace of claim 1, wherein the gas spring acts as a locking device that holds the work surface platform at various vertical heights above the base.

10. The desktop workspace of claim 1, wherein the slidable tray protrudes out, down, and parallel to the work surface platform in the extended position.

11. The desktop workspace of claim 1, wherein the gas spring is attached directly to the one of the set of pivot arms.

12. The desktop workspace of claim 1, wherein the gas spring is attached to the scissoring pivot point.

13. The desktop workspace of claim 1, further comprising a height adjustment locking mechanism that holds the work surface platform at various vertical heights above the base.

14. The desktop workspace of claim 1, wherein the slidable tray is a slidable keyboard tray.

15. A desktop workspace that adjusts vertically, comprising:

a work surface platform;

a slidable tray selectively positionable between a stored position under the work surface platform and an extended position that is outward and lowered with respect to the work surface platform; and

a height adjustment mechanism configured raise and lower the work surface platform relative to an existing platform, the height adjustment mechanism including:

set of pivot arms that connect at scissoring pivot points creating a scissoring motion when raising and lowering the work surface platform to various heights;

bottom pivot points fixed relative to the existing platform and connecting the existing platform and the set of pivot arms;

platform pivot points fixed relative to the work surface platform and connecting the work surface platform and the set of pivot arms;

a first sliding mechanism on an end of a first arm of the set of pivot arms between the end of the first arm and the work surface platform;

a second sliding mechanism on an end of a second arm of the set of pivot arms between the end of the second arm and the existing platform; and

a gas spring that assists in elevation of the work surface platform by applying a force to rotate one of the set of pivot arms as part of the scissoring motion.

16. The desktop workspace of claim 15, wherein an end of the gas spring is fixed to the work surface platform

17. The desktop workspace of claim 15, wherein the second sliding mechanism includes a wheel mounted on the end of the second arm.

18. The desktop workspace of claim 15, wherein the scissoring motion when raising and lowering the work surface platform to the various heights of the height adjustment mechanism moves the work surface platform in a straight vertical direction relative to the existing platform.

19. The desktop workspace of claim 15, wherein the gas spring is a first spring, the desktop workspace comprising a pair of springs attached to the height adjustment mechanism to assist in the elevation of the work surface platform, the pair of springs including the first spring and a second spring.

20. The desktop workspace of claim 15, wherein the gas spring acts as a locking device that holds the work surface platform at various vertical heights above the existing platform.

21. The desktop workspace of claim 15, wherein the slidable tray protrudes out, down, and parallel to the work surface platform in the extended position.

22. The desktop workspace of claim 15, wherein the gas spring is attached directly to the one of the set of pivot arms.

23. The desktop workspace of claim 15, wherein the gas spring is attached to the scissoring pivot point.

24. The desktop workspace of claim 15, further comprising a height adjustment locking mechanism that holds the work surface platform at various vertical heights above the existing platform.

25. The desktop workspace of claim 15, wherein the slidable tray is a slidable keyboard tray.

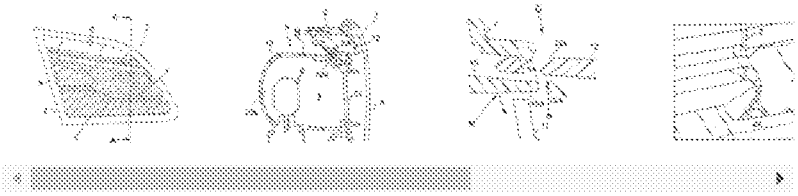
Patents

Vehicle lamp fitting

Abstract

PROBLEM TO BE SOLVED: To provide a vehicle lamp fitting which prevents melting of a hook of a housing and enables improvement of the appearance.SOLUTION: In a vehicle lamp fitting 1, a valve (a light source) 9, a reflector 10 which reflects light from the valve 9, and an extensin 12 covering a gap between the reflector 10 and the housing 2 are housed in a lamp chamber 4 defined by the housing 2 and an outer lens 3 covering an opening of the housing 2. Further, a hook 2A formed at the housing 2 is engaged with a hook hole 12A formed at the extension 12 to fix the extension 12 to the housing 2. The hook hole 12A is formed into a taper hole which shrinks toward the lamp fitting 4, and a heat shielding rib 10A covering the hook hole 12A from the inner side is provided. For example, an opening periphery of the reflector 10 is extended, and an extension part of the opening periphery is formed as the heat shielding rib 10A.SELECTED DRAWING: Figure 3

Images (6)



JP2017045506A

Japan

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Other languages: Japanese

Inventor: 新平 五十嵐, Kohei Igarashi, 新平 五十嵐

Current Assignee : Stanley Electric Co Ltd

Worldwide applications

2015 JP

Application JP2015164341A events

2015-08-24 Application filed by Stanley Electric Co Ltd

2015-08-24 Priority to JP2015164341A

2017-03-02 Publication of JP2017045506A

Status Pending

Info: Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Claims (2)

Hide Dependent translated from Japanese

A light source, a reflector that reflects light from the light source, and an extension that covers a gap between the reflector and the housing are housed in a lamp chamber defined by an outer lens that covers the housing and the opening,
In the vehicle lamp in which the hook formed in the housing and the hook hole formed in the extension are engaged, and the extension is fixed to the housing by this engagement.
A vehicular lamp characterized in that the hook hole is a tapered hole that decreases toward the lamp chamber, and a heat shield rib is provided to cover the hook hole from the inside. The vehicular lamp according to claim 1, wherein a peripheral edge of the opening of the reflector is extended, and the extended portion is used as the heat shield rib.

Description

translated from Japanese

The present invention relates to a vehicular lamp that fixes an extension to a housing by a hook method.

In a vehicular lamp, a transparent outer lens made of resin is also attached to the periphery of an opening of a resin housing, thereby forming a lamp chamber inside the lamp. A light source, a reflector, and an inner lens are formed in the lamp chamber. Extensions are accommodated, but as a method for fixing the outer lens to the housing, bonding with an adhesive such as hot melt, or a hook formed on one of the outer lens or the housing is engaged with a hook hole formed on the other A hook method or the like is used (see, for example, Patent Document 1).

Here, FIG. 5 and FIG. 6 show a conventional example of a vehicle lamp that employs a system in which an extension is fixed to a housing by a hook system.

5 is a partial longitudinal sectional view of a conventional vehicular lamp, FIG. 6 is an enlarged detail view of a portion D of FIG. 5, and the vehicular lamp 101 shown is a rear combination lamp disposed on the left and right of the rear portion of the vehicle. It is used as a stop lamp. The vehicular lamp 101 includes a stop signal 105, a turn signal lamp (not shown), a lamp chamber 104 defined by a resin-made housing 102 and a resin-made transparent outer lens 103 that covers the opening. A lamp unit having different functions such as a tail lamp and a back lamp is integrally incorporated.

As shown in FIG. 5, the stop lamp 105 includes a bulb, which is a light source, and a reflector 110 that reflects light emitted from the bulb 109 toward the rear of the vehicle (to the right in FIG. 5). And a transparent inner lens 111 disposed in front of the reflector 110 in the light reflecting direction (right side in FIG. 5), and an extension 112 that covers the gap between the housing 102 and the reflector 110 and the inner lens 111. Ing. Here, the reflector 110, the inner lens 111, and the extension 112 are integrally formed of resin, and the inner surface (reflection surface) 110a of the reflector 110 is subjected to a reflection process such as aluminum vapor deposition.

Thus, in the stop lamp 105, the extension 112 is fixed to the housing 102 by a hook method. That is, hook holes 112A are formed at a plurality of positions including the upper portion of the extension 112, and hooks 102a formed at a plurality of positions (corresponding to the hook holes 112A) of the housing 102 are engaged with the hook holes 112A. By doing so, the extension 112 is fixed to the housing 102.

JP 2006-235172 A

In the stop lamp 105 provided in the conventional vehicular lamp 101 shown in FIGS. 5 and 6, heat from the bulb 109 and heat from the heated inner lens 111 are extended 112 as indicated by arrows in FIG. The hook 102A of the housing 102 is heated to a temperature higher than the heat resistance temperature of the material of

the housing 102 due to the heat passing through the hook hole 112A of the housing 102, and the hook 102A may be melted to make the extension 112 unstable. Is there.

Another problem is that the appearance quality of the vehicular lamp 101 is impaired because parts such as the inner lens 111 can be seen from the outside through the hook hole 112A of the extension 112.

The present invention has been made in view of the above problems, and an object of the present invention is to provide a vehicular lamp that can prevent melting of a hook of a housing and can improve appearance quality.

In order to achieve the above object, a first aspect of the present invention provides a light source, a reflector that reflects light from the light source, a reflector that reflects light from the light source, a lamp chamber defined by an outer lens that covers a housing and an opening thereof, An extension that covers a gap with the housing is accommodated, and a hook formed in the housing is engaged with a hook hole formed in the extension, and the extension is fixed to the housing by this engagement. In the vehicular lamp, the hook hole is a tapered hole that decreases toward the lamp chamber, and a heat shield rib is provided to cover the hook hole from the inside.

The invention according to claim 2 is characterized in that, in the invention according to claim 1, the periphery of the opening of the reflector is extended, and the extension is used as the heat shield rib.

According to the present invention, the hook hole of the extension through which hot air heated by the light source passes is covered with the heat shield rib from the inside, and the opening area of the hook hole into the lamp chamber is reduced, so that the hook hole passes through the hook hole. The amount of hot air is limited, and heating of the hook of the housing that engages with the hook hole is suppressed. For this reason, the temperature of the hook is suppressed to be equal to or lower than the heat resistance temperature of the material of the housing, the melting of the hook is prevented, and the extension is fixed to the housing stably and reliably.

Further, since the hook hole of the extension is covered with the heat shield rib from the inside, the components in the lamp chamber are not visible from the outside through the hook, and the appearance quality of the vehicular lamp is improved.

1 is a front view of a vehicular lamp according to the present invention. It is the sectional view on the AA line of FIG. It is the B section enlarged detail drawing of FIG. It is a figure of the arrow C direction of FIG. It is a fragmentary longitudinal cross-sectional view of the conventional vehicle lamp. FIG. 6 is an enlarged detail view of a D part in FIG. 5.

Embodiments of the present invention will be described below with reference to the accompanying drawings.

1 is a front view of a vehicular lamp according to the present invention, FIG. 2 is a cross-sectional view taken along line AA in FIG. 1, FIG. 3 is an enlarged detail view of a portion B in FIG. FIG.

A vehicular lamp 1 shown in FIG. 1 is used as a rear combination lamp disposed on the left and right of a rear portion of a vehicle, and includes a resin housing 2 and a resin-made transparent outer lens 3 covering the opening. In the defined lamp chamber 4, a plurality of lamp units having different functions are arranged as a stop lamp 5, a turn signal lamp 6 disposed above and below the stop lamp 5, a tail lamp 7, and the stop lamp 5. The back lamp 8 is integrally incorporated. Since the basic configuration of the left and right vehicular lamps 1 is the same, only one vehicular lamp 1 will be illustrated and described below.

As shown in FIG. 2, the stop lamp 5 includes a bulb 9 that is a light source and a reflector 10 that reflects light emitted from the bulb 9 toward the rear of the vehicle (right side in FIG. 2). And a transparent inner lens 11 disposed in front of the reflector 10 in the light reflection direction (right side in FIG. 2), and an extension 12 that covers the gap between the housing 2, the reflector 10, and the inner lens 11. Has been. Here, the reflector 10, the inner lens 11, and the extension 12 are integrally formed of resin, and the inner surface (reflecting surface) 10a of the reflector 10 is subjected to a reflection process such as aluminum vapor deposition.

Thus, in the stop lamp 5 according to the present embodiment, the extension 12 is fixed to the housing 2 by a hook method. That is, hook holes 12A are formed at a plurality of locations including the upper portion of the extension 12, and each hook hole 12A has a claw-like shape integrally formed at a plurality of locations (locations corresponding to the hook holes 12A) of the housing 2. The extension 12 is fixed to the housing 2 by engaging the hook 2A.

Here, the hook hole 12A formed in the extension 12 is a rectangular taper hole that decreases toward the inside of the lamp chamber 4 (downward in FIGS. 3 and 4), as shown in FIGS. Has been. Specifically, one of the inner peripheral surfaces of the hook hole 12A is a flat tapered surface 12a that opens toward the outside of the lamp chamber 4 (upward in FIGS. 3 and 4).

In the present embodiment, the periphery of the opening of the reflector 10 is integrally extended toward the rear of the vehicle (the right side in FIGS. 2 and 3), and this extension extends the hook hole 12A of the extension 12 from the inside. The heat shield rib 10A is configured to be covered.

In the stop lamp 5 configured as described above, when the driver depresses the brake pedal, the bulb 9 emits light, and the light emitted from the bulb 9 is transmitted to the rear side (reflecting surface) 10a of the reflector 10 (2 and 3), the reflected light passes through the transparent inner lens 11 and the outer lens 3 and is emitted to the rear of the vehicle after the light distribution is controlled. 5 lights up and performs its original function.

Thus, the heat generated by the light emission of the bulb 9 and the heat generated by the heat of the heated inner lens 11 are caused by the flow of the extension 12 in the direction of the tapered hole 12A as shown by the arrows in FIG. The heat shielding rib 10 </ b> A and the extension 12 are used. Further, in the present embodiment, the hook hole 12A of the extension 12 is a tapered hole and the opening area into the lamp chamber 4 is narrowed, so the amount of hot air passing through the hook hole 12A is limited. Heating of the hook 2A of the housing 2 that engages with the hook hole 12A is suppressed. For this reason, the temperature of the hook 2A is suppressed below the heat resistant temperature of the material of the housing 2, the melting of the hook 2A is prevented, and the extension 12 is fixed to the housing 2 stably and reliably. Specifically, according to the thermal simulation, the expected temperature of the hook 2A in the conventional structure is 121.9 ° C., whereas the temperature of the hook 2A in the structure of the present invention is the heat resistant temperature of the material of the housing 2 110. It can be lowered by 106.6 ° C. and 15 ° C. below

In the present embodiment, the hook hole 12A of the extension 12 is covered with the heat shield rib 10A from the inside thereof, so that the components such as the inner lens 11 in the lamp chamber 4 can be seen from the outside through the hook hole 12A. There is also an effect that the overall appearance quality of the vehicular lamp 1 including the stop lamp 5 is improved.

In the above embodiment, the embodiment in which the present invention is applied to a vehicular lamp used as a stop lamp for a rear combination lamp has been described. However, the present invention is not limited to any vehicle used for other purposes. Of course, the present invention can be similarly applied to a lighting fixture. In the above embodiment, the heat shield rib is formed integrally with the reflector. However, the heat shield rib may be formed on other components.

DESCRIPTION OF SYMBOLS 1 Vehicle lamp 2 Housing 2A Housing hook 3 Outer lens 4 Light chamber 5 Stop lamp 6 Turn signal lamp 7 Tail lamp 8 Back lamp 9 Bulb (light source)
DESCRIPTION OF SYMBOLS 10 Reflector 10A Heat shield rib of reflector 10a Inner surface (reflective surface) of reflector
11 Inner lens 12 Extension 12A Extension hook hole 12a Hook hole taper surface

Similar Documents

Publication	Publication Date	Title
JP6261276B2	2018-01-17	Vehicle lighting
JP2010080075A	2010-04-08	Lighting fixture for vehicle
KR101451861B1	2014-10-16	Lamp for vehicle
JP5811675B2	2015-11-11	Vehicle lighting
JP2016004705A	2016-01-12	Vehicular lighting fixture
JP6868974B2	2021-05-12	Light fixtures for vehicles
JP2015185524A	2015-10-22	Lighting tool for vehicle
CN103867988B	2017-09-05	Light-emitting device for automotive headlight and the headlamp equipped with described device
JP2016119283A	2016-06-30	Vehicular lighting fixture
JP2017045506A	2017-03-02	Vehicle lamp fitting
JP2017107646A	2017-06-15	Vehicular lighting fixture including heat source for heating outer cover
JP6238668B2	2017-11-29	Vehicle lighting
JP2013025970A	2013-02-04	Vehicular lamp
JP2012155967A	2012-08-16	Lamp for vehicle
JP5702203B2	2015-04-15	LED position lamp for vehicles
JP6449617B2	2019-01-09	Vehicle lighting
JP6573562B2	2019-09-11	Passing light source module and in-vehicle headlamp
JP2008021602A	2008-01-31	Vehicular lighting fixture
JP2015060797A	2015-03-30	Vehicle lighting appliance
JP2006202600A	2006-08-03	Projector type vehicular headlight unit
KR200482997Y1	2017-03-24	Lamp apparatus for an automobile
JP2014186897A	2014-10-02	Light source device, and front lamp for vehicle using the same
JP6594125B2	2019-10-23	Vehicle clearance ramp structure
JP2013178978A	2013-09-09	Vehicle lamp
JP5677106B2	2015-02-25	Vehicle lighting

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
JP2015164341A	2015-08-24	2015-08-24	Vehicle lamp fitting

Applications Claiming Priority (1)

Application	Filing date	Title
JP2015164341A	2015-08-24	Vehicle lamp fitting

Legal Events

Date	Code	Title	Description
2018-07-05	A621	Written request for application examination	**Free format text:** JAPANESE INTERMEDIATE CODE: A621 **Effective date:** 20180705
2018-07-13	RD04	Notification of resignation of power of attorney	**Free format text:** JAPANESE INTERMEDIATE CODE: A7424 **Effective date:** 20180713
2019-07-29	A977	Report on retrieval	**Free format text:** JAPANESE INTERMEDIATE CODE: A971007 **Effective date:** 20190725
2019-07-30	A131	Notification of reasons for refusal	**Free format text:** JAPANESE INTERMEDIATE CODE: A131 **Effective date:** 20190730
2020-02-18	A02	Decision of refusal	**Free format text:** JAPANESE INTERMEDIATE CODE: A02 **Effective date:** 20200218

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
peripheral		claims,description	2	0.000
melting		abstract,description	4	0.000
HRGPNT3		abstract	1	0.000

Show all concepts from the description section

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特開2017-45506
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(51)Int.Cl.		F I			テーマコード（参考）
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F21W 101/12	*(2006.01)*	F21S	8/10	530	
F21W 101/14	*(2006.01)*	F21S	8/10	340	
F21Y 101/00	*(2016.01)*	F21S	8/10	370	
		F21S	8/10	382	

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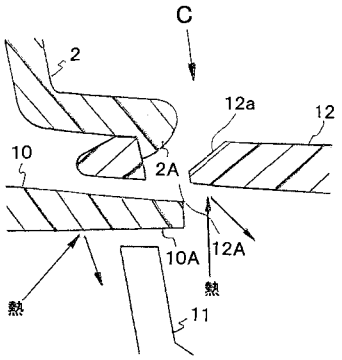
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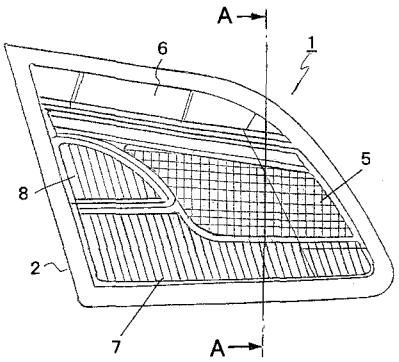
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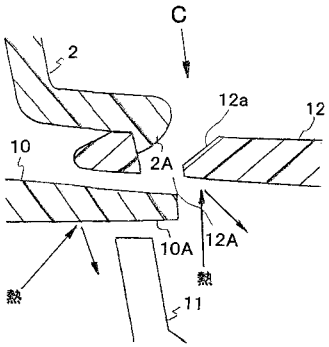
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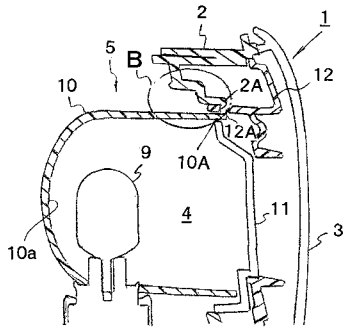
(54)【発明の名称】車両用灯具

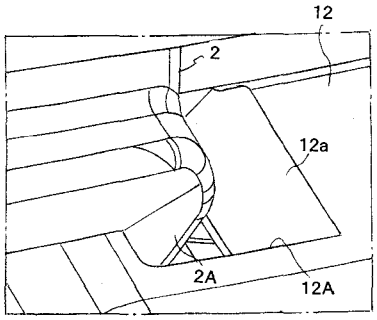
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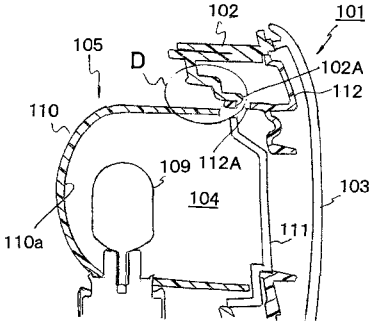


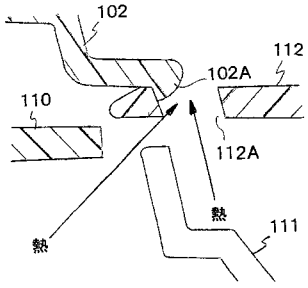

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(51)Int.Cl.

101:12
101:14
101:00

Patents

Adjustable-length column for chair, Tables or like and upright tube therefor

Abstract

A support with adjustable length for chairs and tables comprises an upright tube and a length-adjusting element (2) installed in the tube (1). A piston rod (7) of the length-adjusting element (2) is installed in the bottom (9) of the upright tube (1). The bottom (9) is opened toward inside of the upright tube (1) and provided with a groove (19) projected toward the upright tube (1) in the inside in the radius direction and an annular part (20) which is joined to the groove (19) to fix the piston rod (7). The groove (19) and the annular part (20) are unitedly formed with the upright tube (1).

Classifications

- A47C3/30 Chairs or stools with vertically-adjustable seats with vertically-acting fluid cylinder

View 2 more classifications

CN1142343A

China

Download PDF Find Prior Art Similar

Other languages: Chinese

Inventor: [illegible]

Current Assignee : Suspa Compart AG

Worldwide applications

1995 DE TW 1996 DE EP JP CN KR

Application CN96105489A events

1995-05-30	Priority to DE29508915.6
1995-05-30	Priority to DE29508915U
1996-05-22	Application filed by Suspa Compart AG
1997-02-12	Publication of CN1142343A
2003-05-28	Application granted
2003-05-28	Publication of CN1109270C
2016-05-22	Anticipated expiration
Status	Expired - Fee Related

Info: Patent citations (13), Cited by (1), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Claims (8)

Hide Dependent

1. one kind is used for chair, the column jecket of the adjustable-length of desk or similar object, it is made up of a upright tube (1) and pneumatic or hydropneumatic length adjustment parts, and upright tube (1) and length adjustment parts are to be installed together by a common central longitudinal axis (3), in upright tube (1), the overcoat of length adjustment parts (4) is radially supported, and can move up and down along axis (3) direction through guiding, the piston rod of length adjustment parts (7) is fixed on the bottom (9) of upright tube (1) near the direction along a line (3) its free end, near the end (10) of leaving the upright tube (1) that upright tube (1) locates away from overcoat (4), bottom (9) comprises a groove (19) and an annular section (20), the opening of this groove (19) is the inside towards upright tube (1), and be contained on the radial direction among the upright tube (1), this annular section (20) and groove (19) connect together, and piston rod (7) is installed on the annular section (20), it is characterized in that: groove (19) and annular section (20) and upright tube (1) are integrally formed.

2. column jecket as claimed in claim 1 is characterized in that: described groove (19) has one towards the outside (22) that annular section (20) departs from.

3. column jecket as claimed in claim 1 or 2 is characterized in that: the joint portion of groove (19) and annular section (20) is circular.

4. as one of them described column jecket of claim 1 to 3, on bottom (19), by an axial roller bearing (8) support piston connecting rod (7), it is characterized in that: the diameter of annular section (20) (D ') is greater than the diameter of roller bearing (8) (d ').

5. one kind is used for chair, upright tube in the column jecket of the adjustable-length of desk or similar object, the axis of wherein pneumatic or hydropneumatic length adjustment parts and central longitudinal axis (3) can be movable arbitrarily coaxially, the overcoat (4) of length adjustment parts is radially supported in upright tube (1), and can move up and down along axis (3) direction through guiding, the piston rod of length adjustment parts (7) is being fixed on the bottom (9) of upright tube (1) along axis (3) direction near its free end, leaving outside the upright tube (1) away from overcoat (4), near the end (10) of upright tube (1), bottom (9) comprises a groove (19) and an annular section (20), the opening of this groove (19) is the inside towards upright tube (1), and be contained on the radial direction among the upright tube (1), this annular section (20) and groove (19) connect together, and piston rod (7) is installed on the annular section (20), it is characterized in that: groove (19) and annular section (20) and upright tube (1) are integrally formed.

6. upright tube as claimed in claim 5 is characterized in that: groove (19) has one towards the outside (22) that annular section (20) departs from.

7. as claim 5 or 6 described upright tubes, it is characterized in that: the joint portion of groove (19) and annular section (20) is circular.

8. as one of them described upright tube of claim 5 to 7, this upright tube is used for column jecket, piston rod in this upright tube (7) is to be supported by the axial roller bearing on bottom (9), it is characterized in that: the diameter of annular section (20) (D ') is greater than the diameter of roller bearing (8) (d ').

Description

The column jecket and the upright tube that are used for the adjustable-length of chair, desk or similar object

The present invention relates to a kind of column jecket and a kind of upright tube of adjustable-length.

The column jecket of well-known this adjustable-length comes from European patent EP 0366889B1 (corresponding to No. 4969619 patent of the U.S.).In the column jecket that these are known, the neck-in that upright tube is lower, cross section with a semicircular, this zone, semi-circular section forms a groove, and the opening of this groove is towards opening by the longitudinal axis direction at center and to upright tube inside.The chassis is to be supported by the front portion at upright tube edge.The front portion at edge and the inwall of upright tube separate.With a crimping on the upright tube, groove or similarly thing with towards the upper end of upright tube fixed underpan.This method itself method through having obtained good explanation in practice.

In addition, the column jecket of described adjustable-length is substantially similar to No. 4245826 patent of the U.S. (corresponding to the column jecket of described adjustable-length of German patent DE-U7623238) herein, there, the edge that upright tube is lower is aduncate along radial direction.Like this, the chassis just can be placed on this limit.The bead portion that forms in upright tube can be used as towards the protective device of chassis upside.

Purpose of the present invention is exactly column jecket and the upright tube that a kind of general type is provided respectively, and this column jecket and upright tube have high stability, and structure is simple especially and very easy production.

According to the present invention, the column jecket and the upright tube of the adjustable-length that this purpose can be by a kind of so general type reach.And the column jecket of this adjustable-length has the described feature of characteristic in the claim 1, and upright tube is the described upright tube of claim 5 preamble and has feature described in claim 5 characteristic.

According to the employed method of this invention, there is no need to carry out other independent operation to fix a special chassis by means of a crimping or similar thing.The stability of polycrystalline substance is very high so that compare with piston rod, even very big near near the upright tube bottom or the bearing bottom being connected to, the piston rod of length adjustment parts also can keep quite stable.

Further advantage will embody from dependent claims significantly.

By with reference to the accompanying drawings embodiment being described, the detailed content of this invention may be obvious that.

Its accompanying drawing is:

Fig. 1 is vertical partial sectional view of a column jecket in this invention.

Fig. 2 is the longitudinal sectional view of partial view of the upright tube of column jecket.

Chair column jecket shown in the figure has a upright tube 1, and the gas spring 2 of an adjustable-length has been installed in upright tube 2, and it is a piston cylinder adjusting portion part that comes work with pneumatic or hydropneumatic mode.Upright tube 1 and gas spring 2 have a public longitudinal axis that passes through the center 3.

An overcoat 4 of gas spring 2 is supported in the guide rail axle sleeve 5, and can move along axis 3 directions.Guide rail axle sleeve 5 is mounted an end 6 shown in the figure, i.e. the end by the top of upright tube 1.The overcoat 4 of gas spring 2 is the overcoat of spring itself or the protective sleeve of that overcoat.

From the overcoat 4 outstanding parts of gas spring is a piston rod 7, and it is supported along the chassis 9 of the relative upright tube 1 of axis 3 directions by an axial roller bearing 8.Chassis 9 is set on the end 10 of upright tube 1, and 10 opposite the other end, end are first ends 6; in the drawings, end 10 is located at the bottom.The ledge 11 that passes the piston rod 7 of axial roller bearing 8 extends through the opening part 12 on chassis 9, and opening portion 12 is concentric with axis 3.A shim liner 13 and a spring locking ring 14 prevent that ledge 11 from coming off to bottom, chassis direction.The diameter of opening portion 12 is greater than the diameter of ledge 11.Use this fixing means, gas spring 2 can be with respect to upright tube 1 rotation.Owing between ledge 11 and the opening portion 12 radial clearance 15 is arranged, thus gas spring 2 can be in guide rail axle sleeve 5 proper motion, in other words, do not depart from upright tube 1.By piston rod 7, gas spring 2 is fixed in the upright tube 1 along axis 3 directions at last.Like this, when driving the vertical adjustment of pin 16 driving gas springs do, the overcoat 4 of gas spring 2 will stretch out or indentation conduit 1.Drive the end that pin 16 is placed on the overcoat 4 of gas spring 2, an end opposite with it is piston rod 7.Chair surface or table top just are fixed on and drive pin 16 places.

Adjacent end 10, upright tube 1 have one towards the end 10 tapered portion of shrinking a little, by it fully can be in the tapered hub of corresponding leg chair more than or similar object fixing upright tube 1.

Up to the present described column jecket is known and also can sees on market.It also can be used as the support column jecket of desk or similar object mainly as a kind of support column jecket of chair.For example, in Germany No. 1931012 patent (corresponding to No. 3711054 patent of the U.S.) and European patent EP 0133524B1 (corresponding to No. 4979718 patent of the U.S.) or European patent EP 0366889B1 (corresponding to No. 4969619 patent of the U.S.), just describe and illustrate.

The whole chassis 9 of upright tube 1 is integrally formed in together with upright tube 1, and promptly it is formed by the distortion of upright tube.Be bottom 18 below the tapering part 17, it is that relative tapering part compression forms, and chassis 9 also forms on it.There is the groove 19 of a side opening in the upright tube 1 on chassis 9, and what link to each other with groove 19 in axis 3 directions is an annular section 20 that is substantially the plane.This ring part 20 radially extends to axis 3, and conduct simultaneously is the supporting plane of roller bearing 8 axially, and opening 12 passes wherein.

As seen from the figure, groove 19 is a semicircle approx, does not have slightly pointed edge, and the joint portion 21 between groove 19 and the annular section 20 also is circular, and promptly it is not a wedge angle.For between groove 19 and annular section 20, forming a level and smooth connection, setover significantly towards annular section 20 towards the outside 22 annular section 20, groove 19, depart from the zone, semi-circular section.

As seen from the figure, the inside diameter D of the part 18 of upright tube 1 is than big several times of the diameter of piston rod 7.And the diameter d of roller bearing 8 ' significantly less than inside diameter D.3 mean breadth is 30 millimeters to 50 millimeters to groove 19 along radial direction to axis.The diameter d of piston rod 7 approximately is 10 millimeters.Diameter d ' radius be 20 millimeters to 30 millimeters.

As shown in Figure 1, the ledges 11 that protrude downwards by bottom 9 formed by shim liner 13 and spring locking ring 14, good as if immerse oneself in bottom 9, because protruding, groove 19 exceeded annular section 20 downwards.Therefore spring locking ring 14 is to be protected in the groove 19.It can not be owing to having the multilayer carpet to come off on the ground.And unhurt danger when a user's pin is met the bottom of this upright tube.

Patent Citations (13)

Publication number	Priority date	Publication date	Assignee	Title
Family To Family Citations				
CH105302A *	1923-02-19	1924-07-01	Carel Olland Willem	Adjustable liquid damper.
DE1529723B2 *	1966-12-02	1977-03-10	Stabilus Gmbh, 5400 Koblenz	SHOCK ABSORBER FOR HEIGHT-ADJUSTABLE FURNITURE PARTS
DE7623283U1 *	1976-07-23	1977-01-13	Stabilus Gmbh, 5400 Koblenz	GUIDE COLUMN FOR CONTINUOUSLY HEIGHT ADJUSTMENT OF CHAIR SEATS
US4640484A *	1985-05-06	1987-02-03	Fichtel & Sachs Industries	Support column with gravity dependent retention means
DE3833959A1 *	1988-10-06	1990-04-12	Bauer Fritz & Soehne Ohg	LENGTH ADJUSTABLE COLUMN FOR CHAIRS, TABLES OR THE LIKE
IL9803600 *	1991-05-02	1992-06-21	Yoav Cohen	Plastic stand pipe support for load-bearing adjustable piston
DE4129089A1 *	1991-09-02	1993-03-04	Suspa Compart Ag	Support column for chair or tables adjustable in length - has tubular upright with concentric axle inside it, and length adjustment inside housing, with piston rod and bearing discs.
DE4129513A1 *	1991-09-05	1993-03-11	Schaeffler Waelzlager Kg	SPRING BEARING
DE4200786A1 *	1992-01-14	1993-07-15	Suspa Compart Ag	LENGTH ADJUSTABLE COLUMN FOR TABLES, CHAIRS OR THE LIKE
DE4209218C2 *	1992-03-21	1995-03-16	Fichtel & Sachs Ag	Vibration damper or suspension in telescopic design
DE9208620U1 *	1992-06-26	1992-09-03	Fichtel & Sachs Ag, 8720 Schweinfurt, De	
DE4227553A1 *	1992-08-20	1994-02-24	Stabilus Gmbh	Height adjustable support esp. for chair seat - has foot, upright, guide surface, support in bottom of upright.
US5511759A *	1994-05-26	1996-04-30	Steelcase, Inc.	Hydraulic chair height adjustment mechanism

* Cited by examiner, † Cited by third party

Cited By (1)

Publication number	Priority date	Publication date	Assignee	Title
CN101135095B *	2006-08-31	2011-02-02	海尔集团公司	Full-automatic washing machine and washing method thereof
Family To Family Citations				

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
US4969619A	1990-11-13	Adjustable-length columns for chairs, tables or the like
JP3520116B2	2004-04-19	Longitudinally adjustable supports for chairs, desks, etc.
US4899969A	1990-02-13	Lockable elevating mechanism for the continuous adjustment of furniture and guide sleeve for such an elevating mechanism
US6338231B1	2002-03-12	Table leg with height-adjusting spacer
US4778198A	1988-10-18	Apparatus for compensating transverse forces in automotive struts
EP1696765B1	2007-08-01	A self-stabilizing support assembly for an item of furniture
US5531413A	1996-07-02	Adjustable-length column for chairs, tables or the like
JP2947907B2	1999-09-13	Hydro-magnetic height adjuster
KR940003452B1	1994-04-22	Height-adjustable swivel-tilt cantilever table for use with a recline chair

JPH0767740A	1995-03-14	Guide apparatus for cylindrical parts which are slidable on inside and outside to each other such as telescope
CN1041876A	1990-05-09	Turntable
JPH05154023A	1993-06-22	Vertical pipe supporting body made of plastic for adjustable supporting post to bear load
JP2007244866A	2007-09-27	Support for height-adjustable chair
CN1109527C	2003-05-28	Adjustable-length column for chair, tables or like and upright tube therefor
JPH0690833A	1994-04-05	Height adjustable supporting device
US6267337B1	2001-07-31	Vertically adjustable support for a chair or table
US5427035A	1995-06-27	Height-adjustable table
KR960001431Y1	1996-02-17	Length adjustable gas spring and apparatus using it
US20040076012A1	2004-04-22	Collapsible lampshade
EP1060723A2	2000-12-20	Adjustable side frame and wheelchair with adjustable side frame
CA2204560C	2005-10-18	Chair with vertically shiftable height adjustment
US20210259424A1	2021-08-26	Fixing Structure for a Foot Ring of a Chair
AU6466048B2	1994-02-24	Stackable swivel chair
CN1144902C	2004-04-07	Yarn brake and spindle installed same, double twisting spindle and double twister
US6007044A	1999-12-28	Adjustable-length column for chairs or the like

Priority And Related Applications

Priority Applications (2)

Application	Priority date	Filing date	Title
DE29508915.6		1995-05-30	
DE29508915U	1995-05-30	1995-05-30	Adjustable column for chairs, tables or the like, and standpipe for this

Legal Events

Date	Code	Title	Description
1997-02-12	P801	Publication	
1997-02-12	C06	Publication	
1998-05-27	SE01	Entry into force of request for substantive examination	
1998-05-27	C10	Entry into substantive examination	
2003-05-28	GR01	Patent grant	
2003-05-28	C14	Grant of patent or utility model	
2005-07-20	CF01	Termination of patent right due to non-payment of annual fee	
2005-07-20	C19	Lapse of patent right due to non-payment of the annual fee	

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
Show all concepts from the description section				

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[19]中华人民共和国专利局

[51]Int.Cl[6]
A47C 3/20
A47B 9/00

[12] 发明专利申请公开说明书

[21] 申请号 96105489.1

[43]公开日 1997 年 2 月 12 日

[11] 公开号 CN 1142343A

[22]申请日 96.5.22

[30]优先权

[32]95.5.30 [33]DE[31]29508915.6

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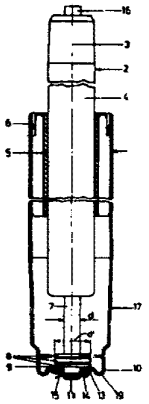
代理人 刘志平

权利要求书 2 页 说明书 4 页 附图页数 1 页

[54]发明名称 用于椅子、桌子或同类物体的可调长度的柱管和直立导管

[57]摘要

一种用于椅子、桌子或同类物体的可调长度的柱管由一个直立导管(1)和一个固定在其中的长度调节部件(2)组成。这个长度调节部件(2)的活塞连杆(7)被固定到直立导管(1)的底部(9)上。底部(9)包括一个凹槽(19)和一个环形部分(20)，该凹槽(19)的开口朝向直立导管(1)的内部，并在半径方向上被包含于直立导管(1)之中，该环形部分(20)和凹槽(19)连在一起，且活塞连杆(7)被安装在环形部分(20)上。凹槽(19)及环形部分(20)是和直立导管(1)一体形成的。



(BJ)第 1456 号

权 利 要 求 书

1. 一种用于椅子、桌子或同类物体的可调长度的柱管，它是由一个直立导管（1）和一个气动或液压气动的长度调节部件组成，而直立导管（1）和长度调节部件是通过一个共同的中心纵轴线（3）安装在一起的，在直立导管（1）中，长度调节部件的外套（4）是沿径向被支撑，并可经引导沿着轴线（3）方向上下移动，长度调节部件的活塞连杆（7）在它的自由端附近沿着辆线（3）的方向被固定到直立导管（1）的底部（9）上，在远离外套（4）离开直立导管（1）处的直立导管（1）的端部（10）附近，底部（9）包括一个凹槽（19）和一个环形部分（20），该凹槽（19）的开口是朝向直立导管（1）的内部，并在半径方向上被包含于直立导管（1）之中，该环形部分（20）和凹槽（19）连在一起，且活塞连杆（7）被安装在环形部分（20）上，其特征在于：凹槽（19）及环形部分（20）是和直立导管（1）一体形成的。

2.如权利要求1所述的柱管，其特征在于：所述凹槽（19）有一个向着环形部分（20）偏离的外侧（22）。

3.如权利要求1或2所述的柱管，其特征在于：凹槽（19）和环形部分（20）的结合部是圆形的。

4.如权利要求1至3其中之一所述的柱管，在底部（19）上，由一个轴向滚柱轴承（8）支撑活塞连杆（7），其特征在于：环形部分（20）的直径（D'）大于滚柱轴承（8）的直径（d'）。

5.一种用于椅子、桌子或同类物体的可调长度的柱管中的直立导管，其中气动的或液压气动的长度调节部件的轴线与中心纵向轴线（3）可同轴地任意活动，在直立导管（1）中长度调节部件的外套（4）沿径向被支撑，而且可经引导沿轴线（3）方向上下移动，长度调节部件的活塞连杆（7）在它的自由端附近沿着轴线（3）方向被固定到直立导管（1）的底部（9）上，在远离外套（4）离开直立导管（1）外的、直立导管（1）的端部（10）附近，底部（9）包括一个凹槽（19）和一个环形部分（20），该凹槽（19）的开口是朝向直立导管（1）的内部，并在半径方向上被包含于直立导管（1）之中，该环形部分（20）和凹槽（19）连在一起，且活塞连杆（7）被安装在环形部分（20）上，其特征在于：凹槽（19）及环形部分（20）是和直立导管（1）一体形成的。

6.如权利要求5所述的直立导管，其特征在于：凹槽（19）有一个向着环形部分（20）偏离的外侧（22）。

7.如权利要求5或6所述的直立导管，其特征在于：凹槽（19）和环形部分（20）的结合部是圆形的。

8.如权利要求5至7其中之一所述的直立导管，该直立导管用于柱管中，在该直立导管中活塞连杆（7）是由底部（9）上的轴向滚柱轴承支撑的，其特征在于：环形部分（20）的直径（D'）大于滚柱轴承（8）的直径（d'）。

说　明　书

用于椅子、桌子或同类物体的可调长度的柱管和直立导管

本发明涉及一种可调长度的柱管和一种直立导管。

众所周知这种可调长度的柱管源于欧洲专利 EP 0 366 889 B1（对应于美国第 4 969 619 号专利）。在这些熟知的柱管中，直立导管较低的边缘向内弯曲，具有一个近似半圆的截面区域，该半圆截面区域形成一个凹槽，该凹槽的开口是朝着通过中心的纵向轴线方向并向直立导管内部张开。底盘是由直立导管边缘的前部来支撑的。边缘的前部与直立导管的内壁隔开。用直立导管上的一个卷边，一个凹槽或类似的东西以朝向直立导管的上端部固定底盘。这种方法本身已法经在实践中得到了很好的说明。

另外，本文中所述的可调长度的柱管基本上类似于美国第 4245 826 号专利（对应于德国专利 DE － U 76 23 238）所描述的可调长度的柱管，在那里，直立导管较低的边缘是沿半径方向向内弯曲的。这样，底盘就可以放在这个边上。在直立导管中形成的卷边部分可以作为朝着底盘上侧的保护装置。

本发明的目的就是分别地提供一种一般类型的柱管和直立导管，这种柱管和直立导管具有高稳定性，而且结构特别简单并非常容易生产。

按照本发明，这个目的可以通过这样一种一般类型的可调长

度的柱管和直立导管来达到。而这种可调长度的柱管具有权利要求1中特征部分所描述的特征，直立导管为权利要求5前序部分所述直立导管并具有权利要求5特征部分中所描述的特征。

根据这项发明所使用的方法，没有必要进行其它独立操作以借助于一个卷边或类似的东西来固定一个专门的底盘。底部结构的稳定性非常之高以至和活塞连杆相比，即使在底部附近或在被连接到底部的轴承附近直立导管非常大，长度调节部件的活塞连杆也会保持相当稳定。

进一步的优点将从从属权利要求中明显地体现出来。

通过根据附图对实施例进行描述，这项发明的详细内容可显而易见。

其附图是：

图1是这项发明中一个柱管的纵向局部剖视图。

图2是柱管的直立导管的部分视图的纵向剖视图。

图中所示的椅子柱管有一个直立导管1，在直立导管2中安装了一个可调长度的气体弹簧2，它是一个以气动或液压气动方式来工作的活塞柱体调节部件。直立导管1和气体弹簧2有一个公共的通过中心的纵轴线3。

气体弹簧2的一个外套4，被支撑在导轨轴套5中，并可沿轴线3方向移动。导轨轴套5被安装在图中所示一个端部6，即直立导管1的靠上边的端部。气体弹簧2的外套4是弹簧本身的外套或者是那个外套的保护套。

从气体弹簧的外套4突出的部分是一个活塞连杆7，它由一个轴向滚柱轴承8沿着轴线3方向相对直立导管1的底盘9支撑。

底盘 9 被设置在直立导管 1 的端部 10 上，端部 10 相反的另一端部是第一端部 6；在图中，端部 10 设在底部。穿过轴向滚柱轴承 8 的活塞连杆 7 的突出部分 11 延伸通过底盘 9 的开口部份 12，而开口部分 12 是和轴线 3 同心的。一个薄垫片 13 和一个弹簧锁定环 14 防止突出部分 11 向底盘下部方向脱落。开口部分 12 的直径大于突出部分 11 的直径。用这种固定方法，气体弹簧 2 可相对于直立导管 1 旋转。由于突出部分 11 和开口部分 12 之间有径向间隙 15，所以气体弹簧 2 能够在导轨轴套 5 中正常运动，换句话说，不偏离直立导管 1。最后借助活塞连杆 7，气体弹簧 2 沿着轴线 3 方向被固定在直立导管 1 中。这样，当驱动销子 16 驱动气体弹簧作纵向调整时，气体弹簧 2 的外套 4 就会伸出或缩进导管 1。驱动销子 16 放在气体弹簧 2 的外套 4 的一端，与它相反的一端是活塞连杆 7。椅子面或桌子顶部就被固定在驱动销子 16 处。

邻近端部 10，直立导管 1 有一个朝向端部 10 稍微收缩的锥形部，通过它完全可在相应的一个多腿椅子或类似物体的锥形轴套中固定直立导管 1。

到目前为止所描述的柱管是公知的而且在市场上也可以见到。它主要作为一种椅子的支撑柱管，也可作为桌子或类似物体的支撑柱管。例如，在德国第 19 31 012 号专利（对应于美国第 3 711 054 号专利）和欧洲专利 EP 0 133 524 B1（对应于美国第 4 979 718 号专利）或欧洲专利 EP 0 366 889 B1（对应于美国第 4 969 619 号专利）中就做了描述和说明。

直立导管 1 的整个底盘 9 是和直立导管 1 整体形成在一起的，即它是由直立导管的变形而形成的。锥形部分 17 下面是下部 18，

它是相对锥形部分压缩而成，而且底盘9也是在它上面形成的。底盘9有一个朝着直立导管1内侧开口的凹槽19，在轴线3方向和凹槽19相连的是一个大体上为平面的环形部分20。这个环形部20沿径向向轴线3延伸，同时作为轴向滚柱轴承8的支撑平面，而且开口12穿过其中。

由图中可见，凹槽19近似地是一个半圆，没有尖的边缘，凹槽19和环形部分20之间的结合部21也是圆形的，即它不是尖角。为在凹槽19和环形部分20之间形成一个平滑的连接，朝向环形部分20的、凹槽19的外侧22朝着环形部分20明显地偏置，偏离半圆截面区域。

由图中可见，直立导管1的部分18的内径D比活塞连杆7的直径大几倍。而且滚柱轴承8的直径d'明显地小于内径D。凹槽19沿半径方向到轴线3的平均宽度是30毫米到50毫米。活塞连杆7的直径d大约是10毫米。直径d'的半径是20毫米到30毫米。

如图1所示，由薄垫片13和弹簧锁定环14所组成的由底部9向下凸出的突出部分11，在底部9中，好象是埋头的，因为凹槽19向下凸出超出了环形部分20。因此弹簧锁定环14是被保护在凹槽19内。它不可能由于地上有多层地毯而脱落。而且当一个使用者的脚碰到这个直立导管的下部时没有受伤的危险。

说　明　书　附　图

图. 1

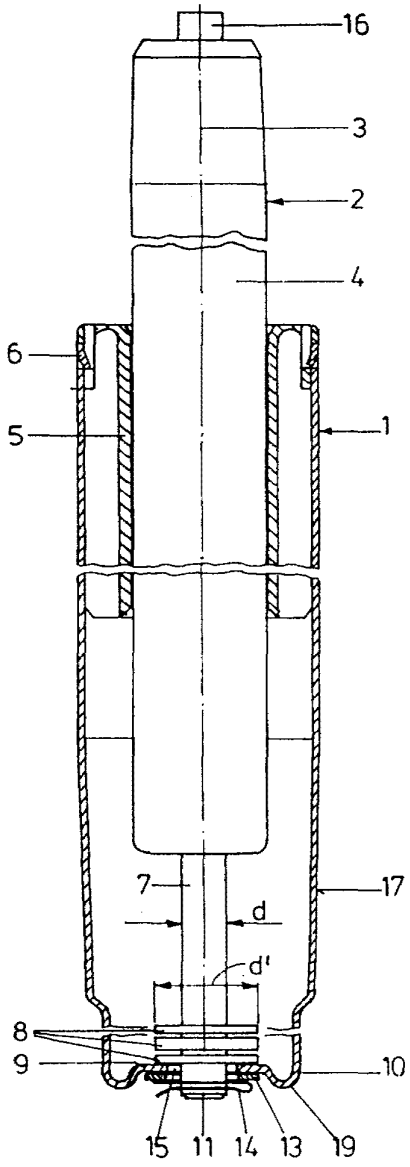
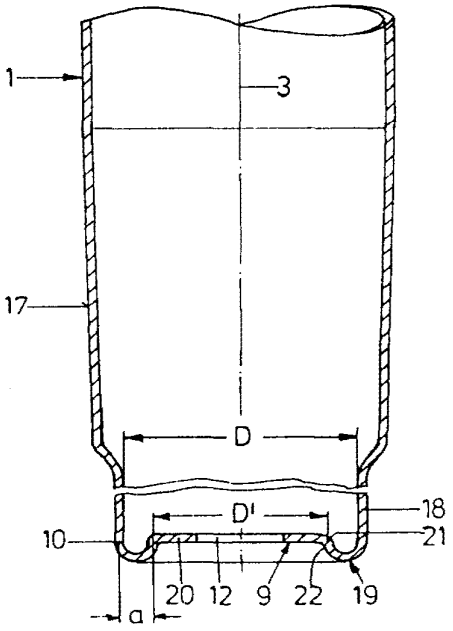


图. 2



PTO/AIA/01 (06-12)
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [x] The attached application, or
- [ ] United States application or PCT international application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

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LEGAL NAME OF INVENTOR

Inventor: Nathan Poniatowski Date (Optional): 01/22/16

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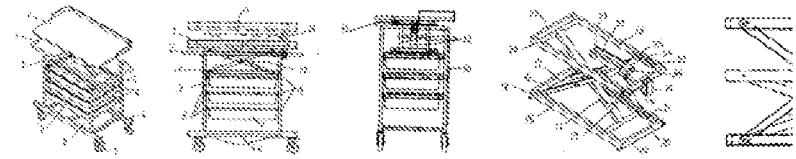
Patents jp2012030022

Elevating table

Abstract

PROBLEM TO BE SOLVED: To provide a safe elevating table which has a neat designed pantographic elevating mechanism, has no vertical play or backlash when a top plate is lifted, prevents acceleration of the elevating speed, controls it at the top plate and prevents finger pinch.SOLUTION: Pantographs 16, 19 comprise three pieces and the middle pantograph 19 is a thick pipe. A movable side gas cylinder 30 is installed near an elevating frame 13, not installed with a base frame 15. A slide fitting 28, a movable part 25 of the pantographs, the fixed side gas cylinder and a gas cylinder driving fitting 14 of the elevating frame 13 are connected with pins each other, and the slide fitting 28 sticks and always keeps parallel to the top plate. The gaps between the crossing pantographs 16, 19 are made the dimension preventing finger pinch, and the gaps between the base frame 15, the elevating frame 13 and the respective pantographs 16, 19 are made safe dimension too.

Images (11)



JP2012030022A
Japan

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Other languages: Japanese

Inventor: Shinji Fukuhara, 伸治 福原

Worldwide applications

2010 JP

Application JP2010182616A events

2010-07-30 Application filed by Fuji Kogyo Kk, 富士工業株式会社

2010-07-30 Priority to JP2010182616A

2012-02-16 Publication of JP2012030022A

Status Pending

Info: Cited by (6), Similar documents, Priority and Related Applications

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Claims (3)

Hide Dependent
translated from Japanese

It has a pantograph type lifting mechanism for the top plate that moves up and down, a base frame on the lower side of the pantograph type lifting mechanism, a lifting frame on the upper side, and a drive source for driving the pantograph type lifting mechanism as the back of the top plate The fixed side of the drive source is coupled to the drive source drive fitting provided on the lift frame, and a lift lever is provided in the vicinity thereof on the fixed side of the drive source. The movable side of the source is connected to one end of a slide fitting that slides horizontally on the back of the top plate to be the movable side of the drive source, and the slide fitting is joined to the movable portion of the pantograph type lifting mechanism to raise and lower the top plate up and down table. 2. The lifting table according to claim 1, wherein an end portion of the slide fitting is extended from a movable shaft of the pantograph lifting mechanism in a fixed direction of the drive source. The pantograph type lifting mechanism is provided with a clearance of about 25 mm between the struts crossing each other and the base frame and the lifting frame so that the movable part stops without contacting the inner end of the lifting frame. The lifting table according to claim 1, wherein a stopper is provided on the rail.

Description

translated from Japanese

The present invention relates to a structure of a pantograph type lifting mechanism for a lifting table.

As a table top / bottom lift mechanism, there is one that lifts and lowers by supporting it with one column or two columnar columns (Patent Document 1), and another that lifts the table with a pantograph lift mechanism (Patent Document 1). 2). Since one top supports the top plate in a cantilevered manner, the end of the top plate tends to tilt due to insufficient strength. With two struts, it is necessary to synchronize the lifting of the left and right struts, and the mechanism is expensive. Many of the pantograph type lifting mechanisms have a lifting gas cylinder sandwiched between the base frame on the fixed side and the lifting frame, which has problems such as not being refreshed in appearance and being difficult to organize. Moreover, there was a danger of finger scissors, etc., because the crossing struts were narrow.

JP-A-11-253239

JP-A-2005-89052

The table lift mechanism with a wide top plate adopts a pantograph type lift mechanism that can be lifted stably without tilting the top plate even in uneven load, but the pantograph type lift mechanism has a design that makes the appearance refreshing To do.

There is a lift mechanism that is fixed to the top plate where the lift lever can be operated so that it can be controlled by hand without play and lifting when the top plate is lifted by the pantograph type lift mechanism, and the lifting speed is not accelerated. .

The object is an elevating table equipped with a pantograph type elevating mechanism that is safe without finger scissors during elevating.

The present invention includes a pantograph type lifting mechanism for a top plate that moves up and down, a base frame on the lower side of the pantograph type lifting mechanism, and a lifting frame on the upper side, and a drive source that drives the pantograph type lifting mechanism is installed on the elevating frame side of the back of the top plate, the fixed side of the drive source is coupled to the driving source driving bracket provided on the elevating frame, and the elevating lever is located in the vicinity of the fixed side of the drive source. The movable side of the drive source is coupled to one end of a slide fitting that slides horizontally on the back

of the top plate to be a movable side of the drive source, and the slide fitting is joined to the movable portion of the pantograph type lifting mechanism to attach the top plate Move up and down.

Preferably, an end portion of the slide fitting is extended from a movable shaft of the pantograph type lifting mechanism in a fixed side direction of the drive source.

More preferably, the pantograph type lifting mechanism is provided with a clearance of about 25 mm between the crossing struts and the base frame and the lifting frame, and the movable part is in close contact with the inner end of the lifting frame. Provide a stopper on the rail so that it stops without stopping.

By attaching the lifting gas cylinder of the pantograph lifting mechanism according to the present invention to the lifting frame, the appearance of the mechanism can be refreshed. Further, since the table is moved up and down by adopting a pantograph type lifting mechanism, the support is not cantilevered even if the top plate has a wide size, and it is strong and stable against uneven loads. There is always close contact between the back of the top plate and the upper surface of the slider bracket, so there is no play and play when the top plate is lifted by hand. When the top plate moves up and down, it moves left and right while rubbing with the sliding material on the top surface of the slider bracket, so the lifting is not accelerated only by the movement of the gas cylinder, but it can be controlled by hand, so the precision equipment on the top plate Safe against.

Cart perspective view with lifting table Front and elevation view of cart with lift table Side view of cart with lifting table Perspective view of gas cylinder type lifting mechanism Front view of lift mechanism, lift view Top view of lifting mechanism Front BB cross section of lifting mechanism Detailed front sectional view of the lifting mechanism BB Perspective view of slide bracket Lifting pantograph strut assembly diagram without finger scissors Perspective view of lifting mechanism with drive spring as tension spring

1 to 4 show an embodiment in which the present invention is suitable for a lift table, in which FIG. 1 is a perspective view of a cart with a lift table, FIG. 2 is a front view thereof, and a lift view, and FIG. 3 is a side view thereof. Indicates. The cart body with the lifting table is provided with four moving casters 7 on the main body base frame 6 and a vertical frame 4a at the bottom so that a plurality of battery trays 8 on which personal computer batteries are mounted can be installed. . The four struts 3 are provided with several horizontal rails 4 symmetrically in the vertical direction between the struts on both sides, and rails 5 are installed in left and right pairs inside the cart body with the lifting table, and each tray 9 is stored. However, the structure can be taken in and out. A space for installing a device having a pantograph type lifting mechanism 12 capable of moving up and down the top table 1 of a wide table is provided at the uppermost stage.

At the top of the four columns, a handle pipe 2 is provided between the lifting table for easy operation of the lifting table. The handle pipe has a shape that protrudes outward from the top width to make it easier to handle and carry the handle. In addition, a wiring molding 10 can be installed on the two rear support columns so that the wiring can be stored. An elevating frame 13 of a pantograph type elevating mechanism is provided on the back of the top plate so that the gas cylinder elevating lever 11 can easily elevate and lower the top plate on the gas cylinder driving bracket 14 provided on the right outer side of the elevating frame. Is provided. The pantograph type lifting mechanism has a structure in which the base frame 15 is fixed to the uppermost stage of the column of the cart body with the lifting table on the fixed side.

FIG. 4 shows details of a pantograph type lifting mechanism in which the drive source is a gas cylinder. FIG. 5 is a front view and an elevation view thereof, FIG. 6 is a plan view thereof, FIG. 7 is a front sectional view taken along line AA, FIG. 8 is a front sectional view taken along line BB, and FIG. Indicates. 4, the base frame 15 fixed to the main body has a hole 18 for attaching a fixed shaft 17 of a pantograph A16 and a lower guide rail 21 for guiding a lateral slide of a movable shaft 20 of a pantograph B19, it is provided on both sides of the direction. Similarly, the elevating frame 13 installed on the back of the top plate is provided with holes 24 for attaching the fixed shaft 23 of the pan tag lug B19 and upper guide rails 26 on which both sides of the movable shaft 25 of the pantograph A slide in the longitudinal direction. . Bearing rollers 36 are attached to both end portions of the pantograph movable shafts 20 and 25, respectively. The upper guide rail 26 on the lifting frame 13 side is provided with a movable shaft stopper 27 for raising and lowering initial height that determines the minimum height of the top plate. The movable shaft 25 of the pantograph A is joined from the upper side as shown in FIG. 9 to the slide metal fitting 28 that slides in the horizontal direction, and is in close contact with the back side of the top plate via a slide tape 29 such as a resin material and can be slid horizontally. It has become. The sliding tape made of this resin material makes the friction with the top plate smooth, and the stability of the top plate is maintained by appropriately controlling the acceleration of the gas cylinder. 7 and 8 are sectional views of the pantograph type lifting mechanism taken along the line BB. The end of the slide fitting 28 opposite to the pantograph movable shaft side is rotationally coupled 32 to the movable side 30 of the gas cylinder. Further, in order to keep the slide fitting 28 in a horizontal direction with the top plate 1 at all times, the slide fitting 28 has an extension portion 34 that extends from the movable shaft 25 of the pantograph A16 by about 40 mm in the direction of the gas cylinder fixing side 35. In addition, a resin sliding material 29 is bonded to the upper surface of the slide fitting 28 between the slide fitting and the back side of the top plate. A fixed side 35 of the gas cylinder is rotationally coupled 31 to a gas cylinder driving bracket 14 provided at an end of the elevating frame 13 for fixing the top plate.

FIG. 10 shows a support structure of a safe pantograph lift mechanism without finger scissors. The pantograph struts of the pantograph A16 and the pantograph B19 are divided into two blocks, the dimensions of the pantograph are maintained so that there is no finger scissors between the struts, and the base frame 15 and the lift frame 13 of FIG. The pantograph's struts and finger scissors are provided with sufficient dimensions so that there is no finger scissors between each strut and the initial angle of the pantograph in FIG. 5 is movable from about 20 degrees to the final angle of around 38 degrees. There is no. As shown in FIG. 6, the distance between the finger and the base frame 15 and between the finger and the lifting frame 13 is 25 mm or more, which is sufficiently safe.
In FIG. 5, the gas cylinder is set so that the initial position is extended by 25 mm or more so that the finger is not caught even in the contracted state. In FIG. 7, the initial position of the movable pipe of the pantograph is also 25 mm or more away from the ends of the base frame 15 and the lifting frame 13, so that the problem of finger scissors does not occur. The initial position of the slide fitting 28 is also provided so as not to pinch the gap with the lifting frame. In order to make the design refreshing in appearance as shown in FIG. 10, the pantograph supports are not four, but the center portion is formed by a thick pipe with a gap of three. Further, as shown in FIG. 4, the gas cylinder is installed on the slide metal fitting 28 on the back side of the top plate and the gas cylinder driving metal fitting 14 provided at the end of the lifting frame 13 so as not to touch the eyes.

FIG. 11 shows an embodiment in which a tension spring is used instead of a gas cylinder as a driving source of the present invention.
The stopper mechanism has a structure in which the stopper lever 40 engages the hole portion of the slide fitting 28 and the stopper hole 39 of the stopper lever receiver 38 to lock the slide fitting.

DESCRIPTION OF SYMBOLS 1 Top plate 2 Handle pipe 3 Support | pillar 4 Horizontal rail 4a Vertical frame 5 Rail 6 Main body base frame 7 Caster 8 Battery tray 9 Tray 10 Wiring mall 11 Lifting lever 12 Pantograph type lifting mechanism 13 Lifting frame 14 Gas cylinder drive bracket 15 Base Frame 16 Pantograph A
17 Pantograph A fixed shaft 18 Pantograph A fixed shaft mounting hole 19 Pantograph B
20 Pantograph B movable shaft 21 Lower guide rail 23 Pantograph B fixed shaft 24 Pantograph B fixed shaft mounting hole 25 Pantograph A movable shaft 26 Upper guide rail 27 Stopper 28 Slide bracket 29 Slide tape 30 Gas cylinder movable side 31 Gas cylinder fixed side coupling portion 32 Gas cylinder movable side coupling portion 33 Slide fitting joint portion 34 Slide fitting extension portion 35 Gas cylinder fixed side 36 Bearing roller 37 Tension spring 38 Stopper lever receiver 39 Stopper hole 40 Stopper lever

Cited By (6)

Publication number	Priority date	Publication date	Assignee	Title
CN104013203A *	2013-03-01	2014-09-03	于庆琴	Tea table
CN104887098A *	2015-06-18	2015-09-09	苏州塔可盛电子科技有限公司	Lifting mechanism for self-heating device for milk heater
CN107323943A *	2017-08-04	2017-11-07	潘丽华	A kind of portable transmission conveying arrangement
JP2018525086A *	2015-09-18	2018-09-06	桑歐人体工学科技股▲分▼有限公司 Loctek Ergonomic Technology Corp.	Lifting platform
CN109717619A *	2019-01-07	2019-05-07	广东楷固建设工程有限公司	A kind of new ceramics composite wood board
CN110844834A *	2019-11-12	2020-02-28	武汉万杰光电有限公司	Lifting platform for machining
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Similar Documents

Publication	Publication Date	Title
JP2012030022A	2012-02-16	Elevating table
US11140977B1	2021-10-12	Desktop workspace that adjusts vertically
US8424983B1	2013-04-23	Motorized upper and lower storage shelves
JP5144668B2	2013-02-13	Drawable guide assembly for drawer
JP5983752B2	2016-09-06	Stacker crane
US9644884B2	2017-05-09	Refrigerator
JP5644213B2	2014-12-24	lift device
JP2017118906A	2017-07-06	Vertically movable storage device
JP2006020866A	2006-01-26	Elevating device of installation table
CN201297482Y	2009-08-26	Sliding base of display bracket
JP5362417B2	2013-12-11	Pantograph lifter
CN110482445B	2021-01-29	Carrying supporting mechanism and carrying vehicle
US8499378B2	2013-08-06	Pedestal end for patients bed
JP2013202054A	2013-10-07	Nurse cart
JPH0713544Y2	1995-04-05	Table with slide rack lifting device
CN201719374U	2011-01-26	Anesthesia machine bearing device for medical crane tower
JPH11139785A	1999-05-25	Lifting traveling device
CN209253472U	2019-08-16	Medical trolley and Medical trolley pedestal
CN214759779U	2021-11-19	Movable bedside table for ward
CN105877202A	2016-08-24	Liftable cabinet
JP6818370B2	2021-01-20	Vehicle maintenance lift
JP6362213B2	2018-07-25	Side plate angle variable type desk
JP2015211845A	2015-11-26	Nurse cart
JPWO2015052998A1	2017-03-09	Loading and unloading the stocker and the drawer shelf unit from the stocker
JP6415064B2	2018-10-31	Caster table

Priority And Related Applications

Priority Applications (1)

Priority Applications (1)

Application	Priority date	Filing date	Title
JP2010182616A	2010-07-30	2010-07-30	Elevating table

Applications Claiming Priority (1)

Application	Filing date	Title
JP2010182616A	2010-07-30	Elevating table

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
elevating		title,abstract,description	19	0.000
Clearance		claims,description	2	0.000
clearance		claims,description	2	0.000
acceleration		abstract,description	2	0.000

Show all concepts from the description section

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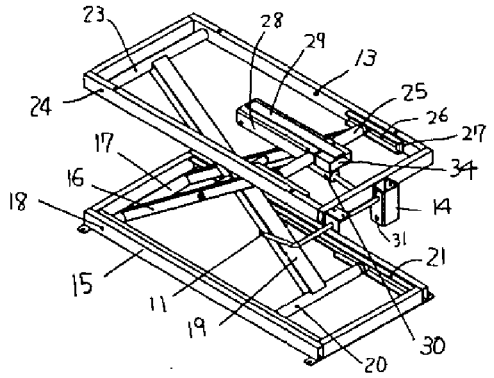
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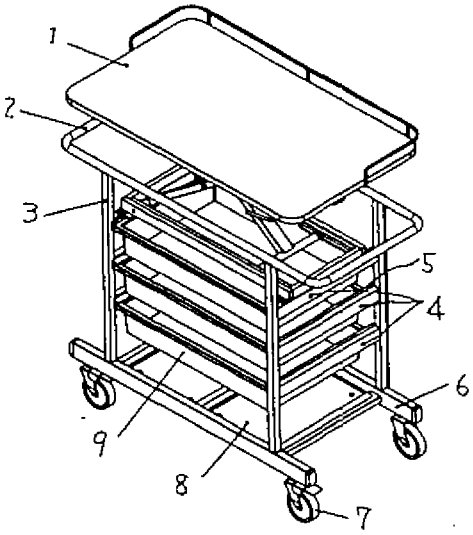
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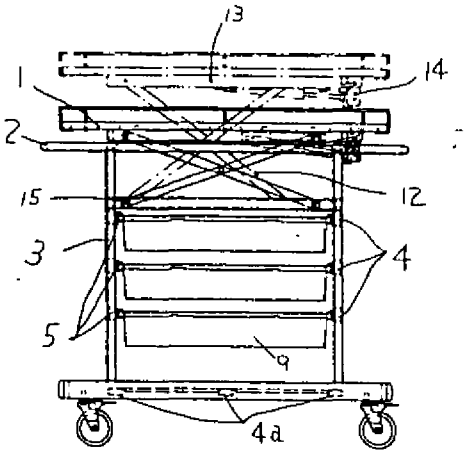
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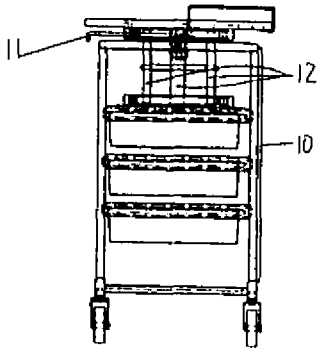
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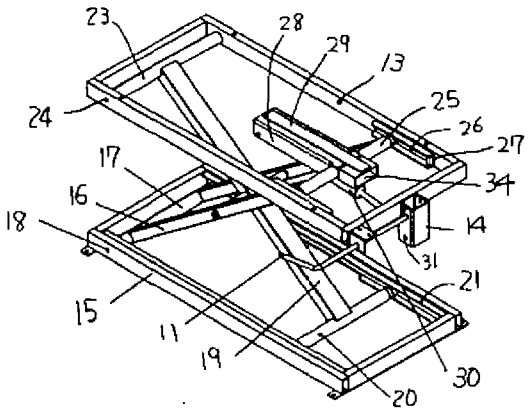
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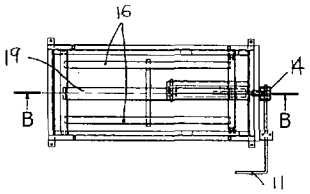


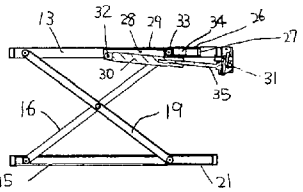

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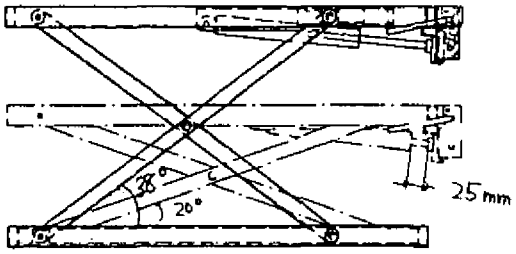

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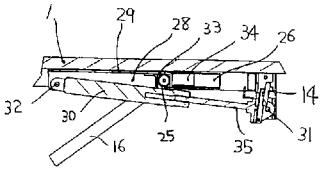

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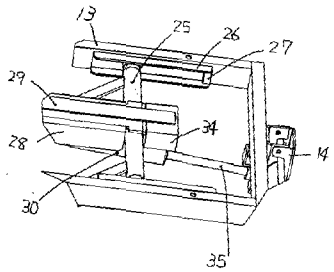

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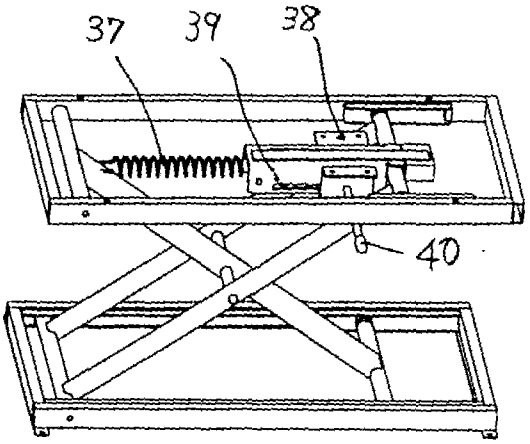

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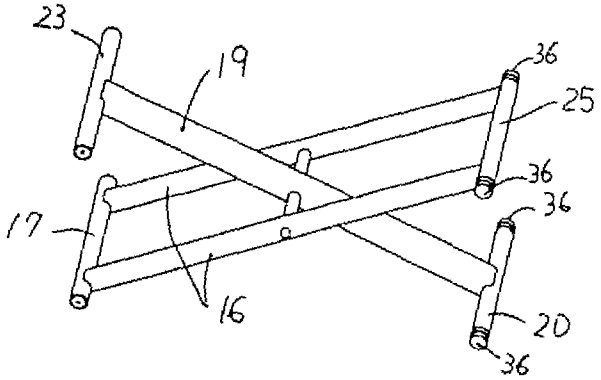

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Patents

The autonomous lifting desk of library users

Abstract

The present invention announces a kind of autonomous lifting desk of library users, belongs to field of furniture.The support of right X-type and the support of left X-type of title relative to each other including desktop and installed in desktop both sides; Height adjustment mechanism is respectively equipped between right X-type support and left X-type support upper end side and desktop.Reader can be according to the height that desktop is adjusted the need for oneself, if the pitch of left and right helical rack is below desktop*P*, change a pitch along the distance between former and later two fulcrums of helical rack center line direction, when height of table top is lifted between the minimum and maximum, the response of the mean change amount of height of table top to a pitch variation amount is 0.885*P*, such degree of regulation fully meets the demand of user, and desktop left and right sides respectively has the button of autonomous table top height adjusting, as long as button press can carry out self-control height of table top, as long as the height of release button desktop is determined that.

Classifications

A47B13/02 Underframes

View 2 more classifications

CN107048694A

China

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Other languages: Chinese

Inventor: [redacted]

Current Assignee : Jiangsu Institute of Architectural Technology ; Jiangsu Jianzhu Institute

Worldwide applications

2017 CN

Application CN201710224048.4A events

2017-04-07 Application filed by Jiangsu Institute of Architectural Technology

2017-04-07 Priority to CN201710224048.4A

2017-08-18 Publication of CN107048694A

Status Pending

Info: Cited by (3), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Claims (7)

Hide Dependent

1. a kind of autonomous lifting desk of library users, it is characterised in that: Including desktop (11) With installed in desktop (11) Both sides Title relative to each other right X-type support and left X-type support;

The right X-type support includes being fixed on desktop (11) Under upper right beam (4) , and positioned at upper right beam (4) Lower section and upper right beam (4) Parallel bottom right beam (22) ; The upper right beam (4) With bottom right beam (22) Between to be connected with middle part hinged in X-type Right first pole (27) With right second pole (28) ; Right second pole (28) Upper end is hinged on upper right beam (4) Rear end, right the Two poles (28) Lower end is hinged with bottom right sliding block (20) ; The bottom right beam (22) Front end is provided with one section of bottom right beam guide groove (C_1) , institute State bottom right sliding block (20) It is slidably mounted on bottom right beam guide groove (C_1) It is interior; Right first pole (27) Lower end is hinged on bottom right beam (22) Rear end, right first pole (27) Upper end is hinged with right rack slide (10) ; The upper right beam (4) Front end is provided with one section of upper right Beam guide groove (C_5) , the right rack slide (10) Positioned at upper right beam guide groove (C_5) It is interior, in right rack slide (10) With upper right beam guide groove (C_5) Between height adjustment mechanism is installed;

The height adjustment mechanism includes being fixed on upper right beam (4) Middle upper right beam guide groove (C_5) Interior right rack frame (8) , right tooth Bar framework (8) Rack, the right rack slide are fixed with the downside of upper side frame (10) Upper surface is fixed with a row and right rack frame (8) The tooth that rack is engaged; Right rack slide (10) End face outside is provided with a right knob guide groove (C_4) , right knob guide groove (C_4) It is interior to be sequentially provided with right back-moving spring outside interior (15) With right knob (16) , right back-moving spring (15) Two ends be connected to it is right by Turn round guide groove (C_4) Bottom and right knob (16) On inner face; The right knob guide groove (C_4) Upside is provided with one and is communicated to right rack Sliding block (10) The right push rod guide groove of upper surface (C_3) , In the right knob (16) On be hinged with right push rod (14) , right push rod (14) Upper end passes through right push rod guide groove (C_3) After be against upper right beam guide groove (C_5) On.

2. the autonomous lifting desk of library users according to claim 1, it is characterised in that: The right rack frame (8) Top precalculated position is provided with the right absolute altitude groove of a desktop (L_1) ; The right rack slide (10) Lateral surface is fixed with a right mark Fixed pole (54) .

3. the autonomous lifting desk of library users according to claim 1, it is characterised in that: The bottom right beam (22) Two ends it is fixed with rubber cushion blocks before the right side (21) With rubber cushion blocks behind the right side (23) ; The right preceding rubber cushion blocks (21) With rubber cushion blocks behind the right side (23) Pass through seccotine and bottom right beam (22) Bonding.

4. the autonomous lifting desk of library users according to claim 1, it is characterised in that: Right second pole (28) Upper end is connected with upper pin behind the right side (1) ; Upper pin behind the right side (1) On be rotatably cased with a right rear enclosure (2) ; Right rear enclosure (2) Using polytetrafluoroethylmateria! material, right rear enclosure (2) With upper right beam (4) Rear end interference connection; The upper pin behind the right side (1)

On also set Having is used for right second pole (28) With right rear enclosure (2) It is positioned at upper pin behind the right side (1) On it is right after upper back-up ring (3) ;

Right second pole (28) Lower end and bottom right sliding block (20) Between pass through lower bearing pin before a right side (17) It is rotatably connected, on the right side Preceding lower bearing pin (17) On be cased with one be located at right second pole (28) With bottom right sliding block (20) Between it is right before trap (18) ; Before the right side Lower bearing pin (17) End, which is provided with, to be used for right second pole (28) It is positioned at lower bearing pin before the right side (17) On right front lower back-up ring (19) .

5. the autonomous lifting desk of library users according to claim 2, it is characterised in that: Right first pole (27) Lower end is connected with lower bearing pin behind the right side (24) ; Lower bearing pin behind the right side (24) On be rotatably cased with a right side after trap (25) , it is right after Trap (25) With bottom right beam (22) Rear end interference connection; The lower bearing pin behind the right side (24) On be additionally provided with for will be trapped behind the right side (25) With right first pole (27) It is positioned at lower bearing pin behind the right side (24) On it is right after lower back-up ring (26) ;

Right first pole (27) Upper end and right rack slide (10) Between pass through upper pin before a right side (12) It is rotatably connected, Upper pin before right (12) End, which is provided with, to be used for right first pole (27) With right rack slide (10) It is positioned at upper pin before the right side (12) On the right side before upper back-up ring (13) .

6. the autonomous lifting desk of library users according to claim 5, it is characterised in that: The right demarcate bar (54) Peace The upper pin before the right side (12) Outer end; Right demarcate bar (54) With right rack slide (10) Between be provided with right alignment pin (55) ; Right mark Fixed pole (54) Upper end is provided with pointer, when the right demarcate bar (54) On pointer alignment desktop (11) On right absolute altitude groove (L_1) When, desktop (11) Height for design altitude datum.

7. the autonomous lifting desk of library users according to claim 1, it is characterised in that: The right rack frame (8) It is fixed on upper right beam (4) Middle upper right beam guide groove (C_5) Interior outer end position, right rack frame (8) Inwall and upper right beam guide groove (C_5) It is interior Flush; Right rack frame (8) Inwall rear and front end passes through right horizontal wood screw (7) With upper right beam guide groove (C_5) Rear and front end Connection.

Description

The autonomous lifting desk of library users

Technical field

The present invention relates to field of furniture, specifically a kind of autonomous lifting desk of library users.

Background technology

Library is the paradise of scholar, no matter the high learning region that library is crowded with short, boy student and schoolgirl, individual study table is usually Have no empty seat, librarian, which makes an inspection tour, to be found, present individual study table is sustained height, this is the relative simplicity based on manufacture with using field The need for the overall aesthetic of conjunction, student is not identical height, and this is the phenomenon of gene and natural selection, then, relative to The higher student of individual study table is for a long time in reading of bending over writing, and the student shorter relative to individual study table raises oneself for a long time Both arms are in reading with writing, and this is that ruler measured proprietary inevitable outcome with same, and this aspect is unfavorable for all Life can pleasantly learn for a long time, and on the other hand also the bone of student, which can be produced, poorly influences, while being also unfavorable for training Support the creativity consciousness of student.

The content of the invention

In order to solve the above technical problems, the present invention provides a kind of autonomous lifting desk of library users, reader can basis The height of desktop is adjusted the need for oneself.

The present invention is achieved through the following technical solutions: A kind of autonomous lifting desk of library users, including desktop and Installed in the support of right X-type and the support of left X-type of the title relative to each other of desktop both sides; The right X-type support includes being fixed on desktop Under upper right beam, and the bottom right beam below the upper right beam with upper right Liangping row; it is connected between the upper right beam and bottom right beam Hinged right first pole and right second pole in X-type in middle part; The right second pole upper end is hinged on after upper right beam End, right second pole lower end is hinged with bottom right sliding block; The bottom right beam front end is provided with one section of bottom right beam guide groove, the bottom right sliding block It is slidably mounted in the beam guide groove of bottom right; The right first pole lower end is hinged on bottom right beam rear end, and right first pole upper end is hinged There is right rack slide; The upper right beam front end is provided with one section of upper right beam guide groove, and the right rack slide is located in upper right beam guide groove, Height adjustment mechanism is installed between right rack slide and upper right beam guide groove; The height adjustment mechanism includes being fixed on upper right It is fixed with the downside of right rack frame in beam in upper right beam guide groove, right rack frame upper side frame on rack, the right rack slide End face is fixed with the tooth that a row is engaged with right rack frame rack; Right rack slide end face outside is provided with a right knob and led Groove, is sequentially provided with right back-moving spring and right knob outside interior in right knob guide groove, right back-moving spring two ends are connected to the right side On knob guide groove bottom and right knob inner face; One, which is provided with, on the upside of the right knob guide groove is communicated to right rack slide upper surface Right push rod guide groove, be hinged with right push rod on the right knob, right push rod upper end is against upper right beam after passing through right push rod guide groove On guide groove.

It is further: Precalculated position is provided with the right absolute altitude groove of a desktop above the right rack frame; The right tooth Bar sliding block lateral surface is fixed with a right demarcate bar.

The bottom right beam two ends are fixed with rubber cushion blocks and rubber cushion blocks behind the right side before the right side; After the right preceding rubber cushion blocks and the right side Rubber cushion blocks are Nian Jie with bottom right beam by secootine.

The right second pole upper end is connected with upper pin behind the right side; Rotatably it is cased with behind the right side on upper pin behind a right side Set; Right rear enclosure uses polytetrafluoroethylmaterial material, and right rear enclosure is connected with the rear end interference of upper right beam; Also set on upper pin behind the right side Have for right second pole and right rear enclosure to be positioned at behind the right side into upper back-up ring after right on upper pin;

It is rotatably connected, is covered before the right side on lower bearing pin by lower bearing pin before a right side between right second pole lower end and bottom right sliding block Trapped before having the right side being located between right second pole and bottom right sliding block; Right front lower end part of pin shaft is provided with that be used for will be right second Bar is positioned at before the right side the right front lower back-up ring on lower bearing pin.

The right first pole lower end is connected with lower bearing pin behind the right side; Rotatably it is cased with behind the right side on lower bearing pin behind a right side Trap, trap and be connected with bottom right beam rear end interference behind the right side; Trapped after being additionally provided with behind the right side on lower bearing pin for by the right side and the right side First pole is positioned at behind the right side lower back-up ring behind the right side on lower bearing pin; Pass through one between right first pole upper end and right rack slide Upper pin is rotatably connected before right, and upper pin end, which is provided with, before the right side is used to right first pole and right rack slide being positioned at the right side Upper back-up ring before the right side on preceding upper pin.

The right demarcate bar is arranged on right preceding upper pin outer end; Right positioning is provided between right demarcate bar and right rack slide Pin; Right demarcate bar upper end is provided with pointer, when the right absolute altitude groove on the pointer alignment desktop in the right demarcate bar, desktop It is highly the altitude datum of design.

The right rack frame is fixed in upper right beam outer end position in upper right beam guide groove, right rack frame inwall and upper right Beam guide groove inner surface is concordant; Right rack frame inwall rear and front end is connected by right horizontal wood screw and upper right beam guide groove rear and front end Connect.

The present invention can according to the height that desktop is adjusted the need for oneself, if below desktop left and right sides helical rack pitch For*P*, change a pitch along the distance between former and later two fulcrums of helical rack center line direction, height of table top is in maximum and most When being lifted between small value, the response of the mean change amount of height of table top to a pitch variation amount is 0.885*P*, such regulation Precision fully meets the demand of user; What the reader that the present invention solves different height was come using sustained height individual study table subband Uncomfortable problem, meets the psychological needs of reader, the service personalized to reader also has been implemented into crucial point, while also being adopted for reader The practical problem solved with the method for theory of mechanisms in real world provides cases' leading.

Brief description of the drawings

Fig. 1 is the front view that desktop of the present invention is preferably minimized position;

Fig. 2 is the front view that desktop of the present invention is raised to optional position;

Fig. 3 is the rearview that desktop of the present invention is preferably minimized position;

Fig. 4 is the rearview that desktop of the present invention is raised to optional position;

Fig. 5 is the left view that desktop of the present invention is raised to optional position;

Fig. 6 is right preceding upper pin junction A-A sectional views in Fig. 1;

Fig. 7 is B-B-section figure of right preceding upper pin junction height of table top non-regulated state in Fig. 1;

Fig. 8 is B-B-section figure of right preceding upper pin junction height of table top adjustment state in Fig. 1;

Fig. 9 is the front view of right rack slide;

Figure 10 is the left view of right rack slide;

Figure 11 is G-G sectional views in Fig. 9;

Figure 12 is the top view of right rack slide;

Figure 13 is right preceding lower bearing pin junction C-C sectional views in Fig. 1;

Figure 14 is lower bearing pin junction D-D sectional views behind the right side in Fig. 1;

Figure 15 is left front upper pin junction E-E sectional views in Fig. 3;

Figure 16 is the F-F sectional views of left push rod junction height of table top non-regulated state in Fig. 3;

Figure 17 is the F-F sectional views of left push rod junction height of table top adjustment state in Fig. 3.

In figure: Upper pin behind 1 right side; 2 right rear enclosures; Upper back-up ring behind 3 right sides; 4 upper right beams; 5 middle bearing pins; 6 middle aprons Circle; 7 right horizontal wood screws; 8 right rack frames; 9 right longitudinal wood screws; 10 right rack slides; 11 desktops; On before 12 right sides Bearing pin; 13 right preceding upper back-up rings; 14 right push rods; 15 right back-moving springs; 16 right knobs; 17 right preceding lower bearing pins; 18 is right front lower Set; 19 right front lower back-up rings; 20 bottom right sliding blocks; 21 right preceding rubber cushion blocks; 22 bottom right beams; Rubber cushion blocks behind 23 right sides; 24 is right Lower bearing pin afterwards; Trapped behind 25 right sides; Lower back-up ring behind 26 right sides; 27 right first poles; 28 right second poles; 54 right demarcate bars; 55 Right alignment pin; 56 right push rod bearing pins;

29 left back upper pins; 30 left back sets; 31 left back upper back-up rings; 32 upper left beams; 33 left horizontal wood screws; 34 left racks Framework; 35 left longitudinal wood screws; 36 left rack slides; 37 left front upper pins; 38 left front upper back-up rings; 39 left push rods; 40 Left back-moving spring; 41 left knobs; 42 left front lower bearing pins; 43 left front trap; 44 left front lower back-up rings; 45 lower-left sliding blocks; 46 Left front rubber cushion blocks; 47 lower-left beams; 48 left back rubber cushion blocks; 49 left back lower bearing pins; 50 left back trap; 51 left back lower blocks Circle; 52 left first poles; 53 left second poles; 57 left demarcate bars; 58 left alignment pins; 59 left push rod bearing pins.

Symbol in figure: L_1The right absolute altitude groove of desktop; L_2The left absolute altitude groove of desktop; C_1Bottom right beam guide groove; C_2Lower-left beam is led Groove; C_3Right push rod guide groove; C_4Right knob guide groove; C_5Upper right beam guide groove; C_6Left push rod guide groove; C_7Left knob guide groove; C_8It is left Upper beam guide groove; *H*Height of table top; H_1Underframe is high; H_2X-type is high; H_3Upper frame is high; L_2Length between the fulcrum of pole two.

Embodiment

The following is the specific embodiment of the present invention, in conjunction with accompanying drawing, the present invention will be further described.

As shown in Figures 1 to 5, the autonomous lifting desk of a kind of library users, including desktop 11 and installed in 11 liang of desktop The support of right X-type and the support of left X-type of the title relative to each other of side; The support of right X-type is identical with left X-type supporting construction, operation principle with Operating process is consistent, and now only the support of right X-type is described extensively.

Right X-type support:

Upper right beam 4 is solid wood beam, and the front end of upper right beam 4 is provided with one section of upper right beam guide grooveC $_5$; Bottom right beam 22 is located at the lower section of upper right beam 4 simultaneously Parallel with upper right beam 4, the front end of bottom right beam 22 is provided with one section of bottom right beam guide grooveC $_1$.Right first pole 27 and the middle part of right second pole 28 Hinged, in X-type, right first pole 27 and right second pole 28 are connected between upper right beam 4 and bottom right beam 22.Bottom right beam 22 two ends are fixed with rubber cushion blocks 21 and rubber cushion blocks 23 behind the right side before the right side; Rubber cushion blocks 21 and rubber cushion blocks 23 behind the right side pass through before right Seccotine is be bonded with bottom right beam 22;

The right upper end of second pole 28 is connected with behind upper pin 1 behind the right side, the right side rotatable on upper pin 1 be cased with behind a right rear enclosure 2, the right side Upper pin 1 constitutes revolute pair with right rear enclosure 2; Right rear enclosure 2 uses polytetrafluoroethylmaterial material, right rear enclosure 2 and the hole of the rear end of upper right beam 4 interference is connected; it is additionally provided with behind the right side on upper pin 1 for right second pole 28 and right rear enclosure 2 to be positioned at behind the right side on upper pin 1 Upper back-up ring 3 behind the right side.In conjunction with shown in Figure 13, the right lower end of second pole 28 is arranged on right preceding lower bearing pin 17 simultaneously with bottom right sliding block 20 Revolute pair is constituted, is trapped before being cased with the right side being located between right second pole 28 and bottom right sliding block 20 on lower bearing pin 17 before the right side 18, it is right before trap and 18 be used for axially position bottom right sliding block 20 and right second pole 28; The end of lower bearing pin 17 is provided with that be used for will before right Right second pole 28 is positioned at before the right side the right front lower back-up ring 19 on lower bearing pin 17; Bottom right sliding block 20 is slidably mounted on bottom right beam guide grooveC $_1$it is interior;

Again as shown in figure 14, the right lower end of first pole 27 is connected with behind lower bearing pin 24 behind the right side, the right side and is rotatably cased with lower bearing pin 24 Trap 25 behind one right side, it is right after trap and 25 be connected with the hole interference of the rear end of bottom right beam 22; 25 are trapped behind the right side by lower bearing pin behind the right side 24 constitute revolute pair with bottom right beam 22, it is right after lower back-up ring 26 25 will be trapped behind the right side with right first pole 27 and being positioned at behind the right side lower pin On axle 24., can by upper pin 12 before a right side between the right upper end of first pole 27 and right rack slide 10 in conjunction with shown in Fig. 6 Rotation connection, right rack slide 10 constitutes revolute pair by upper pin before the right side 12 and right first pole 27, and right preceding upper back-up ring 13 will Right first pole 27 and right rack slide 10 are positioned at before the right side on upper pin 12; Right rack slide 10 is located at upper right beam guide grooveC $_5$ it is interior, in right rack slide 10 and upper right beam guide grooveC $_5$Between height adjustment mechanism is installed.

Height adjustment mechanism:

In conjunction with shown in Fig. 7, Fig. 8, right rack frame 8 is fixed on upper right beam guide groove in upper right beam 4C $_5$interior outer position, right rack The inwall of framework 8 and upper right beam guide grooveC $_5$inner surface is concordant, and rack is fixed with the downside of the right upper side frame of rack frame 8; Right rack frame 8 inwall rear and front end passes through right horizontal wood screw 7 and upper right beam guide grooveC $_5$Rear and front end is fixedly connected.Right rack slide 10 is on the right side Upper beam guide grooveC $_5$Moved forward and backward with right rack frame 8, the outer side position in the right upper surface of rack slide 10 is provided with a row and right tooth The tooth that the rack of bar framework 8 is engaged; Under gravity, the tooth contact of the rack under right rack frame 8 and right rack slide 10, Engagement, keeps the stabilization of desk.In conjunction with shown in Fig. 9 to Figure 12, a right knob is provided with the right end face outside of rack slide 10 Guide grooveC $_4$, right knob guide grooveC $_4$it is interior that right back-moving spring 15 and right knob 16, the right two ends of back-moving spring 15 point are sequentially provided with outside interior Right knob guide groove is not connected toC $_4$On bottom and the inner face of right knob 16; Right knob guide grooveC $_4$Upside is provided with one and is communicated to right tooth The right push rod guide groove of the upper surface of bar sliding block 10C $_3$, right push rod 14 is hinged with by right push rod bearing pin 56 on right knob 16; On the right side Push rod guide grooveC $_3$There is one piece of projection the inner, and the right upper end of push rod 14 is inwardly rolled tiltedly, and the right upper end of push rod 14 passes through right push rod guide grooveC $_3$Afterwards it is against upper right beam guide grooveC $_5$With in projection.

Precalculated position on the right top upper right beam 4 of rack frame 8 is provided with the right absolute altitude groove of a desktopL $_1$; Right rack slide 10 lateral surfaces are provided with right demarcate bar 54, right demarcate bar 54 be arranged on it is right before on upper pin 12, right alignment pin 55 is by right demarcate bar 54 It is positioned on right rack slide 10; The right upper end of demarcate bar 54 is provided with pointer, when on the pointer alignment desktop 11 in right demarcate bar 54 Right absolute altitude grooveL $_1$When, the height of desktop 11 is the altitude datum of design.

With reference to Fig. 1 to Fig. 5, and shown in Figure 15 to Figure 17, left X-type support is identical with the structure that right X-type is supported, and its is specific including: Left back upper pin 29, left back set 30, left back upper back-up ring 31, upper left beam 32, left horizontal wood screw 33, left rack frame 34, Left longitudinal wood screw 35, left rack slide 36, desktop 11, left front upper pin 37, left front upper back-up ring 38, left push rod 39 is left to reset Spring 40, left knob 41, left front lower bearing pin 42, left front 43, left front lower back-up ring 44, lower-left sliding block 45, left front rubber cushion blocks of trapping 46, lower-left beam 47, left back rubber cushion blocks 48, left back lower bearing pin 49 is left back to trap 50, left back lower back-up ring 51, left first pole 52, Left second pole 53, left demarcate bar 57, left alignment pin 58, left push rod bearing pin 59; The left absolute altitude groove of desktopL $_2$, lower-left beam guide grooveC $_2$.C $_8$Left push rod guide groove; C $_7$Left knob guide groove, upper left beam guide grooveC $_8$.

The step-like mounting groove of side opening in upper right beam 4 and the upper end of upper left beam 32, the both sides of desktop 11, which coordinate, is put into upper right beam 4 in the mounting groove of upper left beam 32, upper right beam 4 and the surface of upper left beam 32 and the flush of desktop 11; Right longitudinal wood screw 9 is by the right side Upper beam 4 is fixedly connected with desktop 11, and upper left beam 32 is fixedly connected by left longitudinal wood screw 35 with desktop 11.The right side first it is made up of in the middle of pole 27 middle one end of bearing pin 5 and right second pole 28 and passes through centre in the middle of revolute pair, left first pole 52 The other end of bearing pin 5 constitutes revolute pair with left second pole 53, and middle back-up ring 6 will pass through middle bearing pin 5 in the middle of right first pole 27 One end is centrally positioned on bearing pin 5 with, right second pole 28, left first pole 52, left second pole 53.

Application method:

When inwardly pressing right knob 16 with finger, upper end and the upper right beam guide groove in upper right beam 4 of right push rod 14C $_5$Connect above Touch, the middle part of right push rod 14 and the right push rod guide groove in right rack slide 10C $_3$Contacts side surfaces, the right lower end of push rod 14 and right rack Right knob guide groove in sliding block 10C $_4$Contact below; Right push rod 14, which is swung, makes the thread depth that right rack slide 10 moves down 1.2 timesH $_0$ the tooth above right rack slide 10 separates with the rack of the right upper end of rack frame 8; Meanwhile, the operation supported for left X-type Cheng Xiangtong, now, with the hands moves forward desktop, the height reduction of desktop is with the hands moved rearwards by desktop, the height liter of desktop Height, reduces or is increased to after the height of needs, and both hands leave right knob 16 and left knob 41; So, the right tooth in right X-type support Tooth on bar sliding block 10 is

contacted again with the rack on right rack frame 8, the tooth on left rack slide 36 in the support of left X-type with Rack on left rack frame 34 is contacted again, and the height of desktop is maintained, you can to enter learning state.

Cited By (3)

Publication number	Priority date	Publication date	Assignee	Title
US20180255919A1 *	2015-09-24	2018-09-13	Ergotron, Inc.	Height adjustable device
CN108771404A *	2018-06-20	2018-11-09	[redacted]	A kind of teaching show stand that can highly adjust
US11147366B1	2015-01-24	2021-10-19	Office Kick, Inc.	Desktop workspace that adjusts vertically

Family To Family Citations

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
CN107048694A	2017-08-18	The autonomous lifting desk of library users
CN207679090U	2018-08-03	A kind of autonomous lifting desk of library users
CN104176686A	2014-12-03	Connecting rod lifting and overturning device based on differential screw transmission and rocker slider transmission
CN204483472U	2015-07-22	Student desk and chair
CN203692895U	2014-07-09	Novel table and chair
CN103363269A	2013-10-23	Mobile computer display
CN103211386A	2013-07-24	Notebook computer lifting platform
CN204838523U	2015-12-09	Over -and -under type desktop computer table
CN112641221A	2021-04-13	Intelligent office table with massage function
CN203913916U	2014-11-05	A kind of liftable for placing the table top of computer and accessory
CN209058277U	2019-07-05	A kind of music teaching music easel for being convenient for adjusting height
CN203693008U	2014-07-09	Multifunctional portable desk-and-chair
CN203505798U	2014-04-02	Multifunctional pull rod and luggage utilizing same
CN208061139U	2018-11-06	A kind of financial accounting special purpose computer keyboard
JP2016104117A	2016-06-09	Desk including top plate with variable inclination angle
JP3153928U	2009-09-24	Multi-function lifting table
CN202233824U	2012-05-30	Novel adjustable reading desk with periodical bracket
CN214904569U	2021-11-30	Table and chair height adjusting structure
CN215271168U	2021-12-24	Reading table with changeable length
CN203814991U	2014-09-10	Folding chair
CN203851999U	2014-10-01	Ascending and descending regulating device for student school desk and chair
CN210583605U	2020-05-22	Baby's machine convenient to remove
CN206694783U	2017-12-01	Based on computer display adjustable height support base
CN210443251U	2020-05-01	Small size with double-beam strut
CN211666232U	2020-10-13	Support base for attaching lifting scaffold

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
CN201710224048.4A	2017-04-07	2017-04-07	The autonomous lifting desk of library users

Applications Claiming Priority (1)

Application	Filing date	Title
CN201710224048.4A	2017-04-07	The autonomous lifting desk of library users

Legal Events

Date	Code	Title	Description
2017-08-18	PB01	Publication	
2017-08-18	PB01	Publication	
2017-09-12	SE01	Entry into force of request for substantive examination	
2017-09-12	SE01	Entry into force of request for substantive examination	

Concepts

machine-extracted

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material		claims,description	3	0.000
response		abstract,description	2	0.000

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(19)中华人民共和国国家知识产权局

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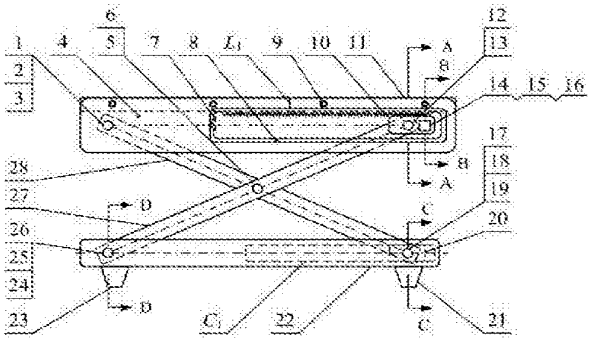
权利要求书2页 说明书5页 附图9页

(54)发明名称

图书馆读者自主升降书桌

(57)摘要

本发明公布一种图书馆读者自主升降书桌，属于家具领域。包括桌面和安装在桌面两侧的彼此相对称的右X型支撑和左X型支撑；右X型支撑和左X型支撑上端一侧与桌面之间分别设有高度调节机构。读者可以根据自己的需要调节桌面的高度，若桌面下面左右斜齿条的节距为*P*，沿着斜齿条中线方向前后两个支点之间的距离改变一个节距，桌面高度在最大值与最小值之间升降时，桌面高度的平均变化量对一个节距变化量的响应为0.885*P*，这样的调节精度完全满足使用者的需求，桌面左右侧各有自主调节桌面高度的按钮，只要按动按钮即可进行自我调节桌面高度，只要松开按钮桌面的高度就确定了。



CN 107048694 A

1.一种图书馆读者自主升降书桌，其特征在于：包括桌面(11)和安装在桌面(11)两侧的彼此相对称的右X型支撑和左X型支撑；

所述右X型支撑包括固定在桌面(11)下的右上梁(4)，和位于右上梁(4)下方与右上梁(4)平行的右下梁(22)；所述右上梁(4)与右下梁(22)之间连接有中部铰接在一起呈X型的右第一支杆(27)和右第二支杆(28)；所述右第二支杆(28)上端铰接在右上梁(4)后端，右第二支杆(28)下端铰接有右下滑块(20)；所述右下梁(22)前端开有一段右下梁导槽(C_1)，所述右下滑块(20)滑动安装在右下梁导槽(C_1)内；所述右第一支杆(27)下端铰接在右下梁(22)后端，右第一支杆(27)上端铰接有右齿条滑块(10)；所述右上梁(4)前端开有一段右上梁导槽(C_5)，所述右齿条滑块(10)位于右上梁导槽(C_5)内，在右齿条滑块(10)与右上梁导槽(C_5)之间安装有高度调节机构；

所述高度调节机构包括固定在右上梁(4)中右上梁导槽(C_5)内的右齿条框架(8)，右齿条框架(8)上边框下侧固定有齿条，所述右齿条滑块(10)上端面固定有一排与右齿条框架(8)齿条相配合的齿；右齿条滑块(10)外侧端面开有一个右按扭导槽(C_4)，右按扭导槽(C_4)内由内之外依次设有右复位弹簧(15)和右按扭(16)，右复位弹簧(15)两端分别连接在右按扭导槽(C_4)底部和右按扭(16)内端面上；所述右按扭导槽(C_4)上侧开有一条连通至右齿条滑块(10)上端面的右推杆导槽(C_3)，在所述右按扭(16)上铰接有右推杆(14)，右推杆(14)上端穿过右推杆导槽(C_3)后抵在右上梁导槽(C_5)上。

2.根据权利要求1所述的图书馆读者自主升降书桌，其特征在于：所述右齿条框架(8)上方预定位置设有一条桌面右标高刻线(L_1)；所述右齿条滑块(10)外侧面固定有一个右标定杆(54)。

3.根据权利要求1所述的图书馆读者自主升降书桌，其特征在于：所述右下梁(22)两端固定有右前橡胶垫块(21)和右后橡胶垫块(23)；所述右前橡胶垫块(21)和右后橡胶垫块(23)通过强力胶与右下梁(22)粘接。

4.根据权利要求1所述的图书馆读者自主升降书桌，其特征在于：所述右第二支杆(28)上端连接有右后上销轴(1)；所述右后上销轴(1)上可转动套有一个右后套(2)；右后套(2)采用聚四氟乙烯材料，右后套(2)与右上梁(4)后端过盈连接；在所述右后上销轴(1)上还设有用于将右第二支杆(28)与右后套(2)定位在右后上销轴(1)上的右后上挡圈(3)；

右第二支杆(28)下端与右下滑块(20)之间通过一个右前下销轴(17)可转动连接，在右前下销轴(17)上套有一个位于右第二支杆(28)和右下滑块(20)之间的右前下套(18)；右前下销轴(17)端部设有用于将右第二支杆(28)定位在右前下销轴(17)上的右前下挡圈(19)。

5.根据权利要求2所述的图书馆读者自主升降书桌，其特征在于：所述右第一支杆(27)下端连接有右后下销轴(24)；所述右后下销轴(24)上可转动套有一个右后下套(25)，右后下套(25)与右下梁(22)后端过盈连接；在所述右后下销轴(24)上还设有用于将右后下套(25)与右第一支杆(27)定位在右后下销轴(24)上的右后下挡圈(26)；

右第一支杆(27)上端与右齿条滑块(10)之间通过一个右前上销轴(12)可转动连接，在右前上销轴(12)端部设有用于将右第一支杆(27)和右齿条滑块(10)定位在右前上销轴(12)上的右前上挡圈(13)。

6.根据权利要求5所述的图书馆读者自主升降书桌，其特征在于：所述右标定杆(54)安装在右前上销轴(12)外端；右标定杆(54)与右齿条滑块(10)之间设有右定位销(55)；右标

定杆(54)上端设有指针，当所述右标定杆(54)上的指针对准桌面(11)上的右标高刻线(L_1)时，桌面(11)的高度为设计的基准高度。

7.根据权利要求1所述的图书馆读者自主升降书桌，其特征在于：所述右齿条框架(8)固定在右上梁(4)中右上梁导槽(C_5)内外端位置，右齿条框架(8)内壁与右上梁导槽(C_5)内表面平齐；右齿条框架(8)内壁前后两端通过右横向木螺钉(7)与右上梁导槽(C_5)前后两端连接。

图书馆读者自主升降书桌

技术领域

[0001] 本发明涉及家具领域，具体是一种图书馆读者自主升降书桌。

背景技术

[0002] 图书馆是学子的天堂，不论高与矮、男生与女生挤满图书馆的学习区，自习桌常常座无虚席，馆员巡视发现，现在的自习桌是同一高度，这是基于制造的相对简单性与使用场合的整体美感的需要，学生可不是相同的身高，这是基因与自然选择的现象，于是，相对于自习桌较高的学生长时间在弯腰看书与写字，相对于自习桌较矮的学生长时间抬高自己的双臂在看书与写字，这是用同一把尺子度量所有人的必然结果，这一方面不利于所有的学生都能长时间舒心地学习，另一方面也会对学生的骨骼产生不良地影响，同时也不利于培养学生的创新意识。

发明内容

[0003] 为解决上述技术问题，本发明提供一种图书馆读者自主升降书桌，读者可以根据自己的需要调节桌面的高度。

[0004] 本发明是通过如下技术方案实现的：一种图书馆读者自主升降书桌，包括桌面和安装在桌面两侧的彼此相对称的右X型支撑和左X型支撑；所述右X型支撑包括固定在桌面下的右上梁，和位于右上梁下方与右上梁平行的右下梁；所述右上梁与右下梁之间连接有中部铰接在一起呈X型的右第一支杆和右第二支杆；所述右第二支杆上端铰接在右上梁后端，右第二支杆下端铰接有右下滑块；所述右下梁前端开有一段右下梁导槽，所述右下滑块滑动安装在右下梁导槽内；所述右第一支杆下端铰接在右下梁后端，右第一支杆上端铰接有右齿条滑块；所述右上梁前端开有一段右上梁导槽，所述右齿条滑块位于右上梁导槽内，在右齿条滑块与右上梁导槽之间安装有高度调节机构；所述高度调节机构包括固定在右上梁中右上梁导槽内的右齿条框架，右齿条框架上边框下侧固定有齿条，所述右齿条滑块上端面固定有一排与右齿条框架齿条相配合的齿；右齿条滑块外侧端面开有一个右按扭导槽，右按扭导槽内由内之外依次设有右复位弹簧和右按扭，右复位弹簧两端分别连接在右按扭导槽底部和右按扭内端面上；所述右按扭导槽上侧开有一条连通至右齿条滑块上端面的右推杆导槽，在所述右按扭上铰接有右推杆，右推杆上端穿过右推杆导槽后抵在右上梁导槽上。

[0005] 其进一步是：所述右齿条框架上方预定位置设有一条桌面右标高刻线；所述右齿条滑块外侧面固定有一个右标定杆。

[0006] 所述右下梁两端固定有右前橡胶垫块和右后橡胶垫块；所述右前橡胶垫块和右后橡胶垫块通过强力胶与右下梁粘接。

[0007] 所述右第二支杆上端连接有右后上销轴；所述右后上销轴上可转动套有一个右后套；右后套采用聚四氟乙烯材料，右后套与右上梁后端过盈连接；在所述右后上销轴上还设有用于将右第二支杆与右后套定位在右后上销轴上的右后上挡圈；

右第二支杆下端与右下滑块之间通过一个右前下销轴可转动连接，在右前下销轴上套有一个位于右第二支杆和右下滑块之间的右前下套；右前下销轴端部设有用于将右第二支杆定位在右前下销轴上的右前下挡圈。

[0008] 所述右第一支杆下端连接有右后下销轴；所述右后下销轴上可转动套有一个右后下套，右后下套与右下梁后端过盈连接；在所述右后下销轴上还设有用于将右后下套与右第一支杆定位在右后下销轴上的右后下挡圈；右第一支杆上端与右齿条滑块之间通过一个右前上销轴可转动连接，在右前上销轴端部设有用于将右第一支杆和右齿条滑块定位在右前上销轴上的右前上挡圈。

[0009] 所述右标定杆安装在右前上销轴外端；右标定杆与右齿条滑块之间设有右定位销；右标定杆上端设有指针，当所述右标定杆上的指针对准桌面上的右标高刻线时，桌面的高度为设计的基准高度。

[0010] 所述右齿条框架固定在右上梁中右上梁导槽内外端位置，右齿条框架内壁与右上梁导槽内表面平齐；右齿条框架内壁前后两端通过右横向木螺钉与右上梁导槽前后两端连接。

[0011] 本发明可以根据自己的需要调节桌面的高度，若桌面下面左右两侧斜齿条的节距为P，沿着斜齿条中线方向前后两个支点之间的距离改变一个节距，桌面高度在最大值与最小值之间升降时，桌面高度的平均变化量对一个节距变化量的响应为$0.885P$，这样的调节精度完全满足使用者的需求；本发明解决了不同高度的读者使用同一高度自习桌子带来的不适问题，满足读者的心理需求，也将对读者个性化的服务落实到了实处，同时也为读者采用机构学的方法解决现实世界中的实际问题提供了案例引导。

附图说明

[0012] 图1是本发明桌面降到最低位置的主视图；

图2是本发明桌面升到任意位置的主视图；

图3是本发明桌面降到最低位置的后视图；

图4是本发明桌面升到任意位置的后视图；

图5是本发明桌面升到任意位置的左视图；

图6是图1中右前上销轴连接处A-A截面图；

图7是图1中右前上销轴连接处桌面高度非调节状态的B-B截面图；

图8是图1中右前上销轴连接处桌面高度调节状态的B-B截面图；

图9是右齿条滑块的主视图；

图10是右齿条滑块的左视图；

图11是图9中G-G截面图；

图12是右齿条滑块的俯视图；

图13是图1中右前下销轴连接处C-C截面图；

图14是图1中右后下销轴连接处D-D截面图；

图15是图3中左前上销轴连接处E-E截面图；

图16是图3中左推杆连接处桌面高度非调节状态的F-F截面图；

图17是图3中左推杆连接处桌面高度调节状态的F-F截面图。

[0013] 图中：1 右后上销轴；2 右后套；3 右后上挡圈；4 右上梁；5 中间销轴；6 中间挡圈；7 右横向木螺钉；8 右齿条框架；9 右纵向木螺钉；10 右齿条滑块；11 桌面；12 右前上销轴；13 右前上挡圈；14 右推杆；15 右复位弹簧；16 右按扭；17 右前下销轴；18 右前下套；19 右前下挡圈；20 右下滑块；21 右前橡胶垫块；22 右下梁；23 右后橡胶垫块；24 右后下销轴；25 右后下套；26 右后下挡圈；27 右第一支杆；28 右第二支杆；54 右标定杆；55 右定位销；56 右推杆销轴；

29 左后上销轴；30 左后套；31 左后上挡圈；32 左上梁；33 左横向木螺钉；34 左齿条框架；35 左纵向木螺钉；36 左齿条滑块；37 左前上销轴；38 左前上挡圈；39 左推杆；40 左复位弹簧；41 左按扭；42 左前下销轴；43 左前下套；44 左前下挡圈；45 左下滑块；46 左前橡胶垫块；47 左下梁；48 左后橡胶垫块；49 左后下销轴；50 左后下套；51 左后下挡圈；52 左第一支杆；53 左第二支杆；57 左标定杆；58 左定位销；59 左推杆销轴。

[0014] 图中符号：L_1 桌面右标高刻线；L_2 桌面左标高刻线；C_1 右下梁导槽；C_2 左下梁导槽；C_3 右推杆导槽；C_4 右按扭导槽；C_5 右上梁导槽；C_6 左推杆导槽；C_7 左按扭导槽；C_8 左上梁导槽；H 桌面高度；H_1 底架高；H_2 X型高；H_3 顶架高；L_z 支杆两支点之间的长度。

具体实施方式

[0015] 以下是本发明的一个具体实施例，现结合附图对本发明做进一步说明。

[0016] 如图1至图5所示，一种图书馆读者自主升降书桌，包括桌面11和安装在桌面11两侧的彼此相对称的右X型支撑和左X型支撑；右X型支撑和左X型支撑结构相同，工作原理和操作过程一致，现仅对右X型支撑做详尽描述。

[0017] 右X型支撑：

右上梁4为实木梁，右上梁4前端开有一段右上梁导槽C_5；右下梁22位于右上梁4下方并与右上梁4平行，右下梁22前端开有一段右下梁导槽C_1。右第一支杆27和右第二支杆28中部铰接在一起，呈X型，右第一支杆27和右第二支杆28连接在右上梁4和右下梁22之间。右下梁22两端固定有右前橡胶垫块21和右后橡胶垫块23；右前橡胶垫块21和右后橡胶垫块23通过强力胶与右下梁22粘接；

右第二支杆28上端连接有右后上销轴1，右后上销轴1上可转动套有一个右后套2，右后上销轴1与右后套2组成转动副；右后套2采用聚四氟乙烯材料，右后套2与右上梁4后端的孔过盈连接；右后上销轴1上还设有用于将右第二支杆28与右后套2定位在右后上销轴1上的右后上挡圈3。再结合图13所示，右第二支杆28下端与右下滑块20安装在右前下销轴17上并组成转动副，在右前下销轴17上套有一个位于右第二支杆28和右下滑块20之间的右前下套18，右前下套18用于轴向定位右下滑块20与右第二支杆28；右前下销轴17端部设有用于将右第二支杆28定位在右前下销轴17上的右前下挡圈19；右下滑块20滑动安装在右下梁导槽C_1内；

再如图14所示，右第一支杆27下端连接有右后下销轴24，右后下销轴24上可转动套有一个右后下套25，右后下套25与右下梁22后端的孔过盈连接；右后下套25通过右后下销轴24与右下梁22组成转动副，右后下挡圈26将右后下套25与右第一支杆27与定位在右后下销轴24上。再结合图6所示，右第一支杆27上端与右齿条滑块10之间通过一个右前上销轴12可转动连接，右齿条滑块10通过右前上销轴12与右第一支杆27组成转动副，右前上挡圈13将

右第一支杆27和右齿条滑块10定位在右前上销轴12上；右齿条滑块10位于右上梁导槽C_5内，在右齿条滑块10与右上梁导槽C_5之间安装有高度调节机构。

[0018] 高度调节机构：

再结合图7、图8所示，右齿条框架8固定在右上梁4中右上梁导槽C_5内靠外位置，右齿条框架8内壁与右上梁导槽C_5内表面平齐，右齿条框架8上边框下侧固定有齿条；右齿条框架8内壁前后两端通过右横向木螺钉7与右上梁导槽C_5前后两端固定连接。右齿条滑块10在右上梁导槽C_5和右齿条框架8内前后移动，右齿条滑块10上端面靠外侧位置设有一排与右齿条框架8齿条相配合的齿；在重力作用下，右齿条框架8下的齿条与右齿条滑块10的齿接触、啮合，保持桌子的稳定。再结合图9至图12所示，在右齿条滑块10外侧端面开有一个右按扭导槽C_4，右按扭导槽C_4内由内之外依次设有右复位弹簧15和右按扭16，右复位弹簧15两端分别连接在右按扭导槽C_4底部和右按扭16内端面上；右按扭导槽C_4上侧开有一条连通至右齿条滑块10上端面的右推杆导槽C_3，在右按扭16上通过右推杆销轴56铰接有右推杆14；在右推杆导槽C_3内端有一块凸起，右推杆14上端向内侧倾斜，右推杆14上端穿过右推杆导槽C_3后抵在右上梁导槽C_5与凸起上。

[0019] 右齿条框架8上方右上梁4上的预定位置设有一条桌面右标高刻线L_1；右齿条滑块10外侧面设有右标定杆54，右标定杆54安装在右前上销轴12上，右定位销55将右标定杆54定位在右齿条滑块10上；右标定杆54上端设有指针，当右标定杆54上的指针对准桌面11上的右标高刻线L_1时，桌面11的高度为设计的基准高度。

[0020] 结合图1至图5，以及图15至图17所示，左X型支撑和右X型支撑的结构相同，其具体包括：左后上销轴29，左后套30，左后上挡圈31，左上梁32，左横向木螺钉33，左齿条框架34，左纵向木螺钉35，左齿条滑块36，桌面11，左前上销轴37，左前上挡圈38，左推杆39，左复位弹簧40，左按扭41，左前下销轴42，左前下套43，左前下挡圈44，左下滑块45，左前橡胶垫块46，左下梁47，左后橡胶垫块48，左后下销轴49，左后下套50，左后下挡圈51，左第一支杆52，左第二支杆53，左标定杆57，左定位销58，左推杆销轴59；桌面左标高刻线L_2 ，左下梁导槽C_2 ，C_6 左推杆导槽；C_7 左按扭导槽，左上梁导槽C_8 。

[0021] 右上梁4和左上梁32上端内侧开口台阶状的安装槽，桌面11两侧配合放入右上梁4和左上梁32的安装槽内，右上梁4和左上梁32表面与桌面11表面平齐；右纵向木螺钉9将右上梁4与桌面11固定连接起来，左纵向木螺钉35将左上梁32与桌面11固定连接起来。右第一支杆27中间通过中间销轴5一端与右第二支杆28组成转动副，左第一支杆52中间通过中间销轴5另一端与左第二支杆53组成转动副，中间挡圈6将右第一支杆27中间通过中间销轴5一端与、右第二支杆28、左第一支杆52、左第二支杆53定位在中间销轴5上。

[0022] 使用方法：

当用手指向内按动右按扭16时，右推杆14的上端与右上梁4内的右上梁导槽C_5上面接触，右推杆14的中部与右齿条滑块10内的右推杆导槽C_3侧面接触，右推杆14下端与右齿条滑块10内的右按扭导槽C_4下面接触；右推杆14摆动使右齿条滑块10下移1.2倍的螺纹高度H_0，右齿条滑块10上面的齿与右齿条框架8上端的齿条分离；同时，针对左X型支撑的操作过程相同，此时，用双手向前移动桌面，桌面的高度降低，用双手向后移动桌面，桌面的高度升高，降低或升高到需要的高度后，双手离开右按扭16与左按扭41；这样，右X型支撑中的右齿条滑块10上的齿与右齿条框架8上的齿条再次接触，左X型支撑中的左齿条滑块36上的齿与

左齿条框架34上的齿条再次接触，桌面的高度得到保持，即可以进入学习状态了。

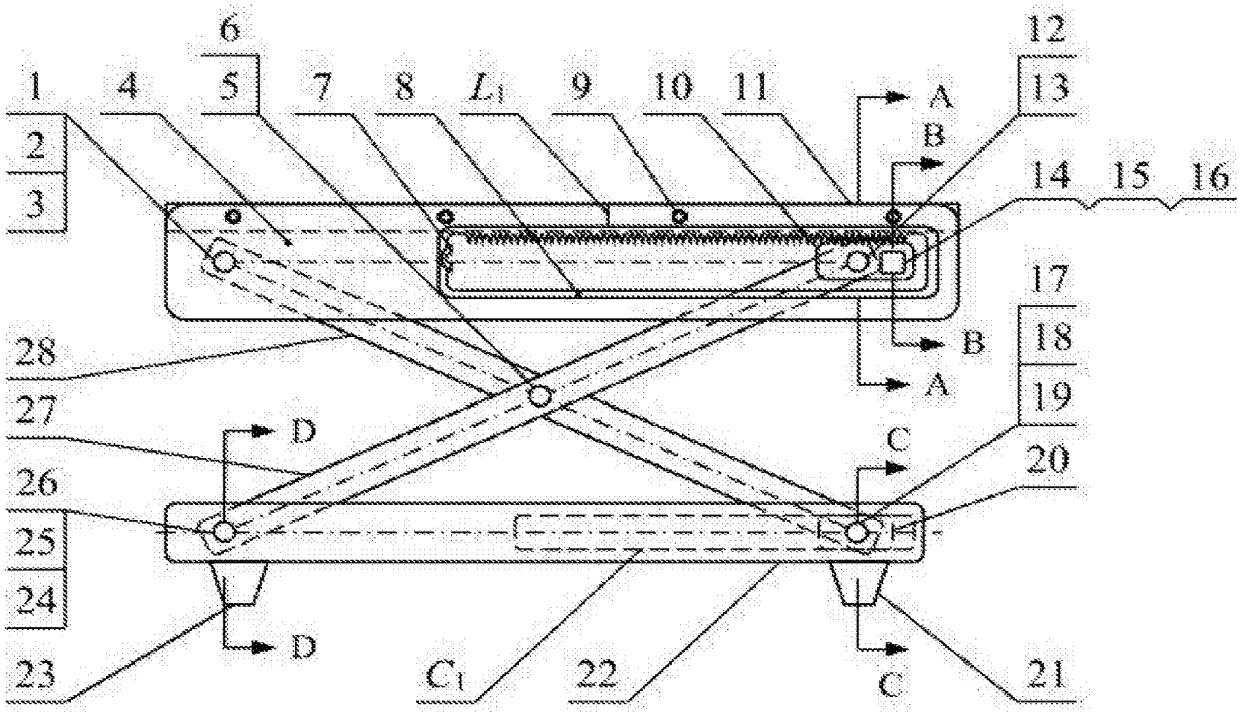

6
12
1
4
5
7
8
L_1
9
10
11
A
13
2
B
3
14
15
16
17
28
B
18
A
19
27
D
C
26
20
25
24
D
23
C_1
22
C
21

图1

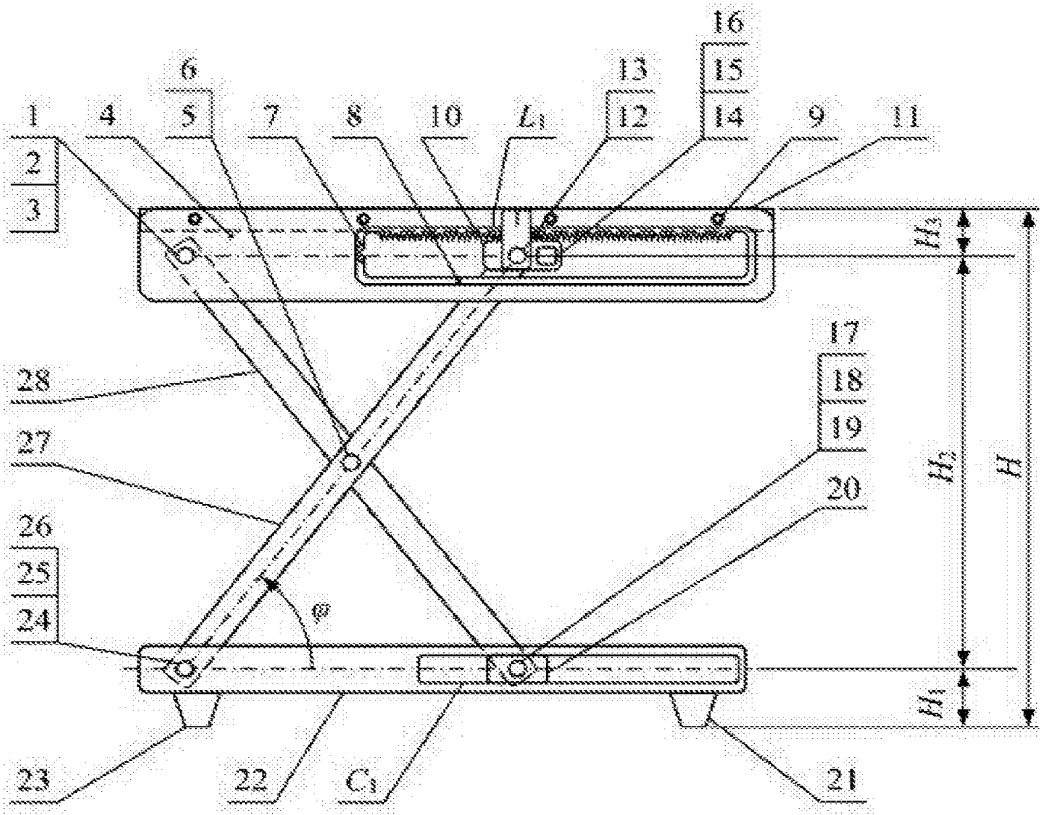

16
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14
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13
12
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2
3
4
7
8
10
L_1
9
11
H_3
17
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19
28
27
20
H_2
H
26
25
24
φ
H_1
23
22
C_1
21

图2

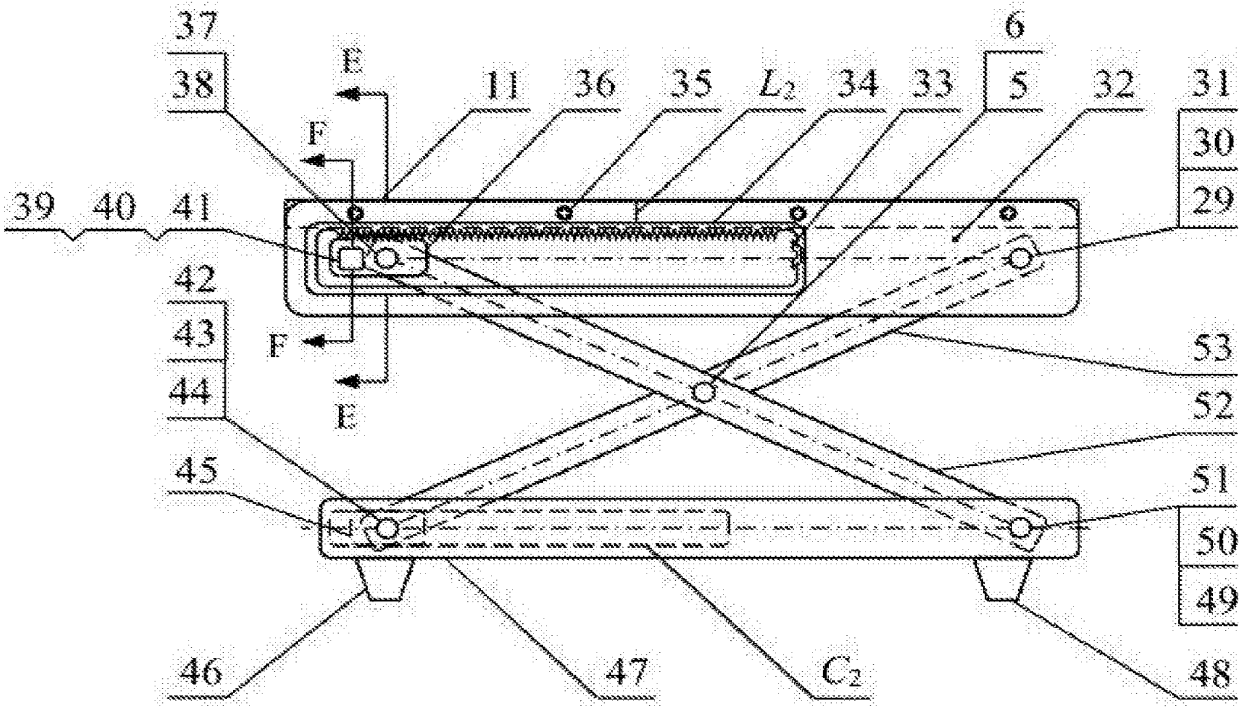

37
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E
F
11
36
35
L_2
34
33
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32
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39
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41
42
43
44
F
E
53
52
45
51
50
49
46
47
C_2
48

图3

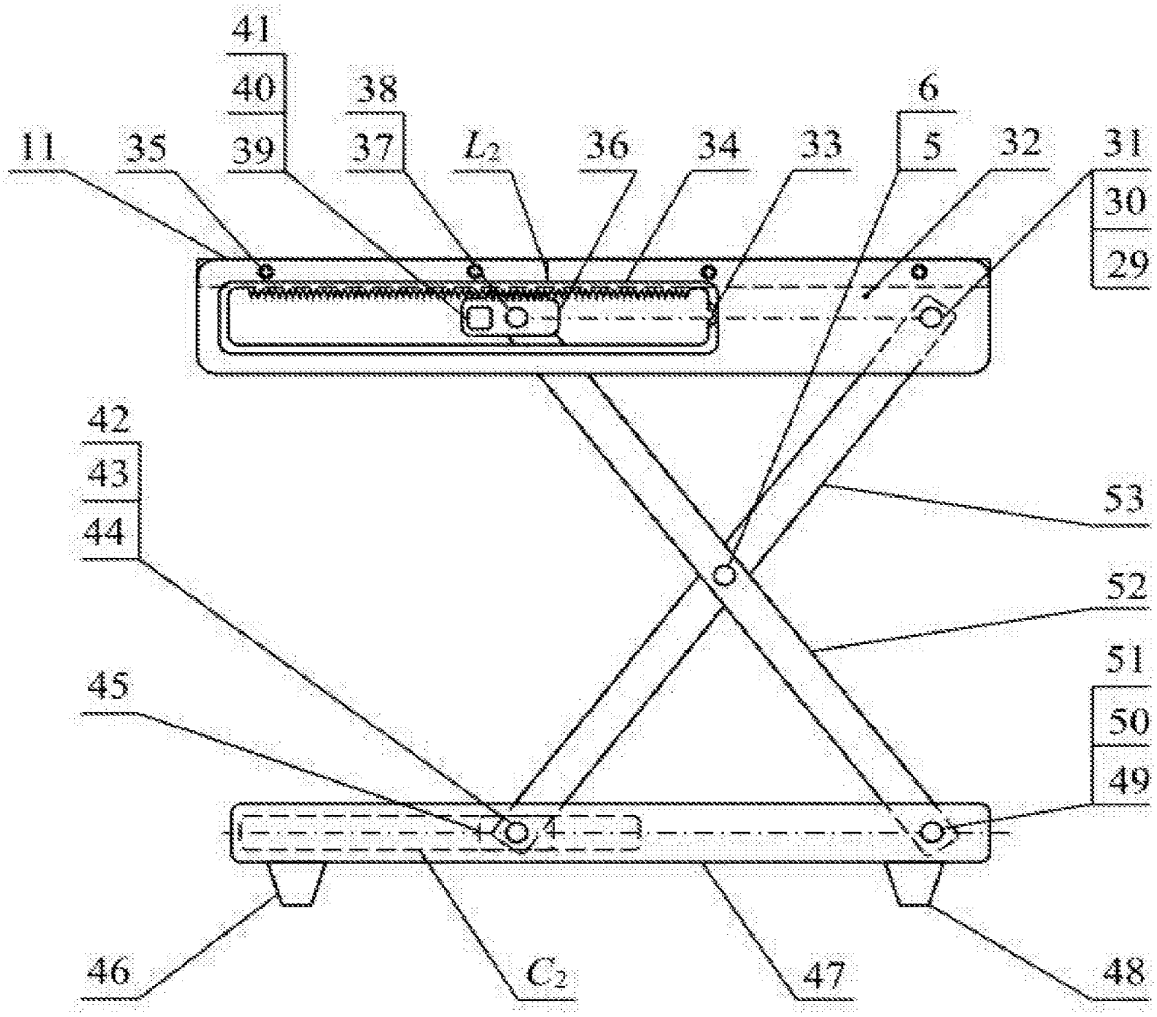

41
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39
38
37
L_2
36
34
33
6
5
32
31
30
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11
35
42
43
44
53
52
51
50
49
45
4
46
C_2
47
48

图4

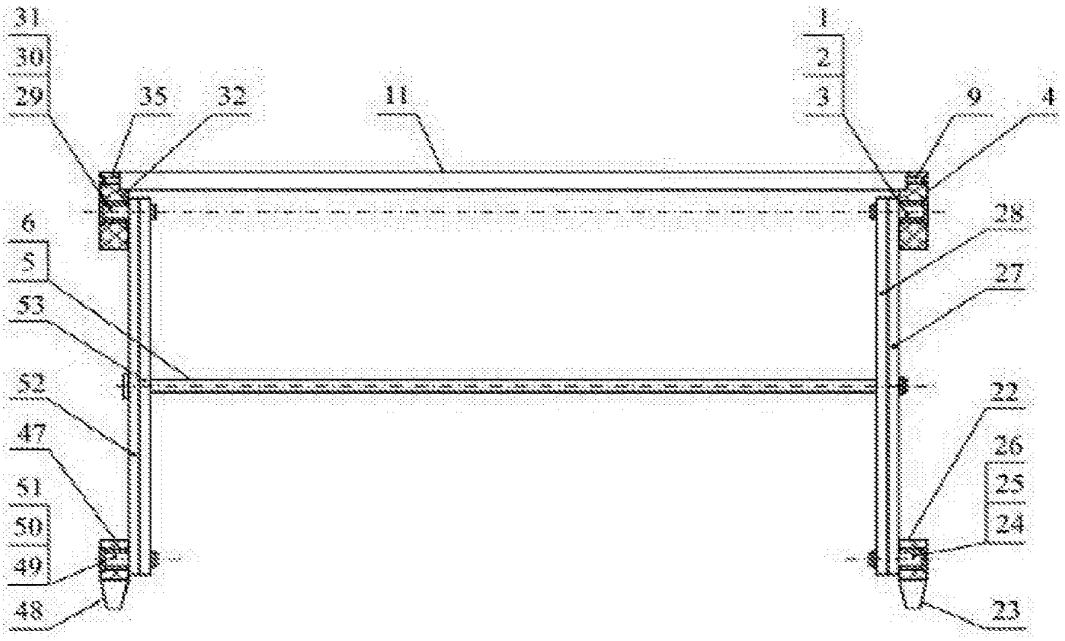

31
30
29
35
32
11
1
2
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51
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图5

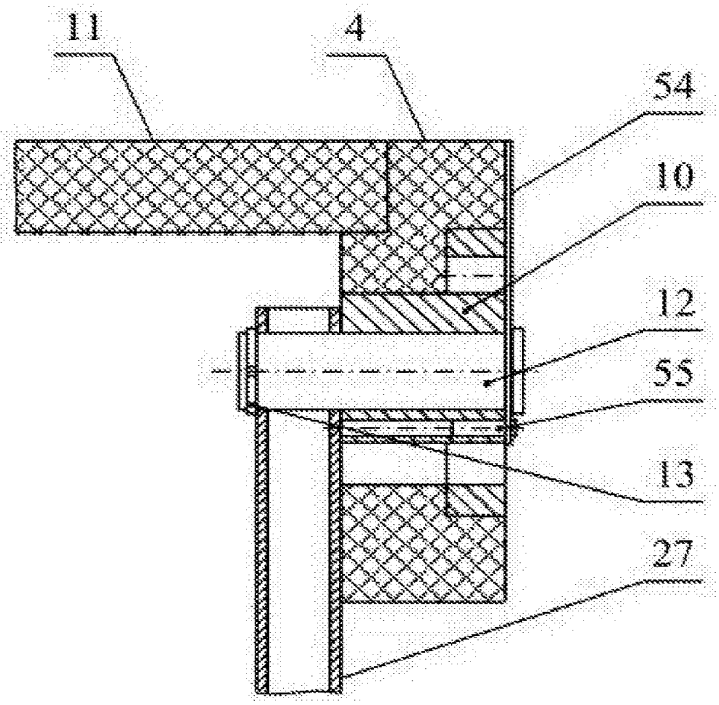

11
4
54
10
12
55
13
27

图6

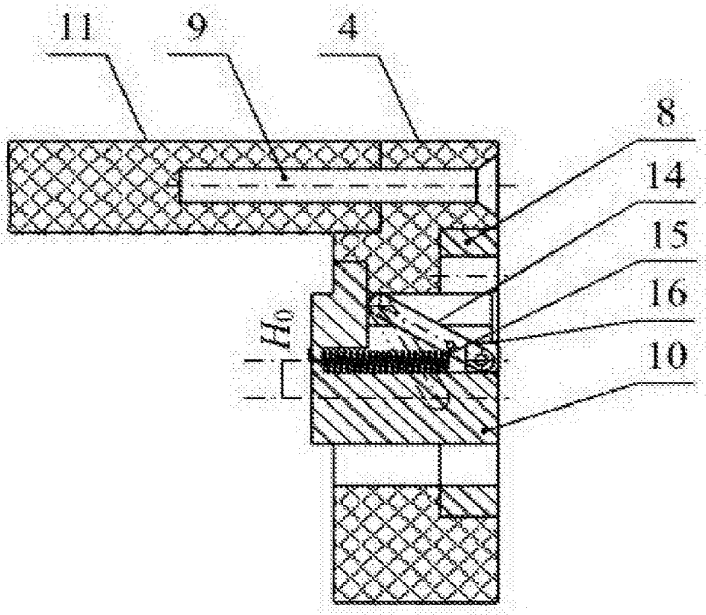


图7

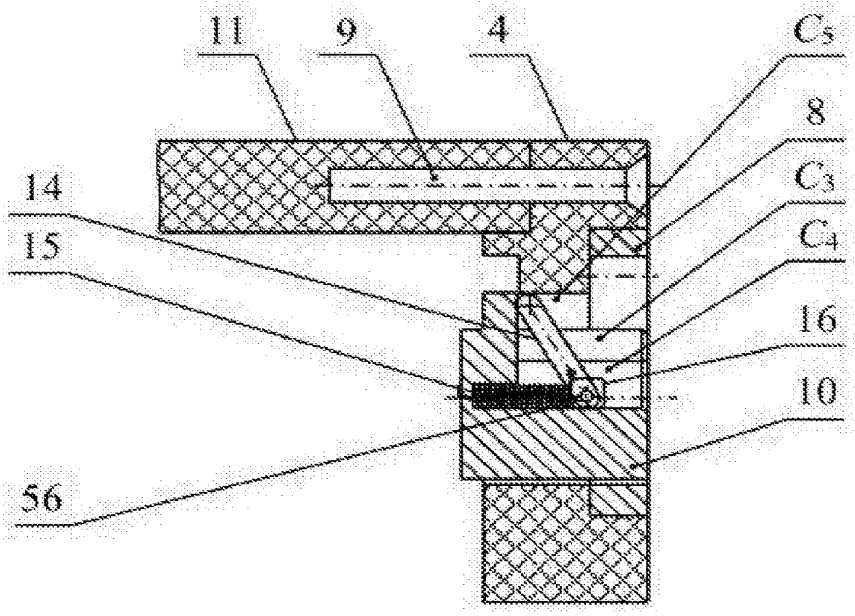


图8

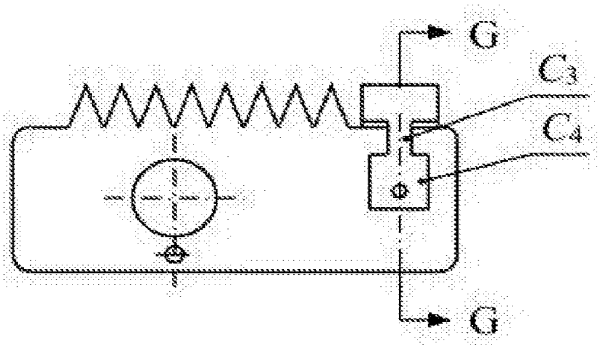


图9

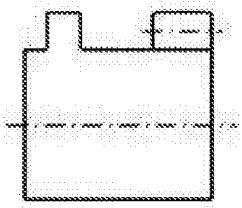


图10

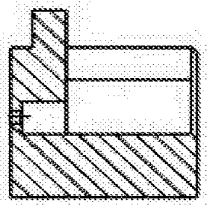


图11

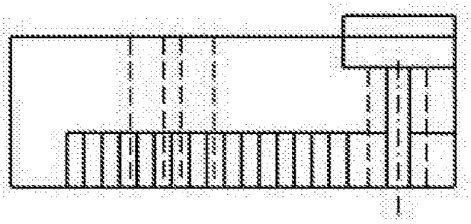


图12

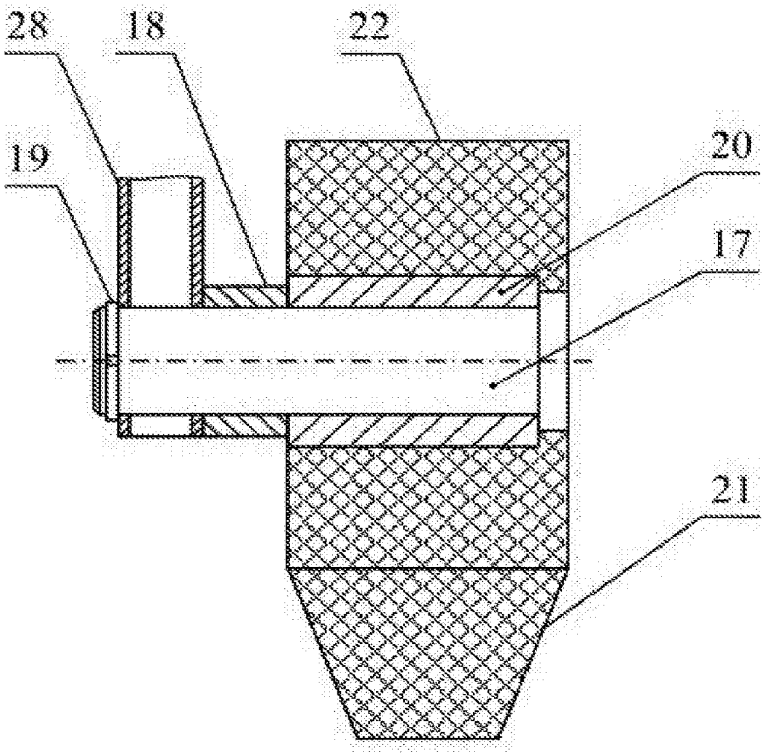


图13

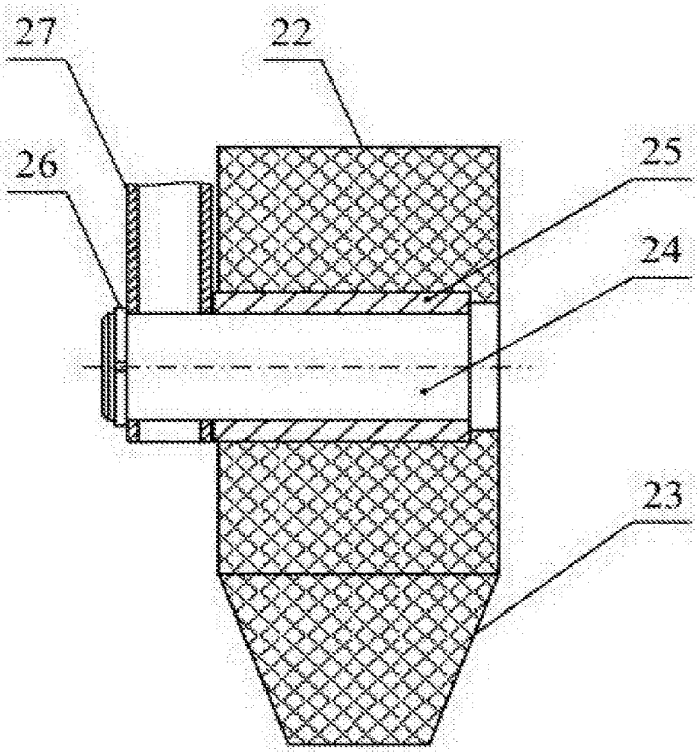


图14

15

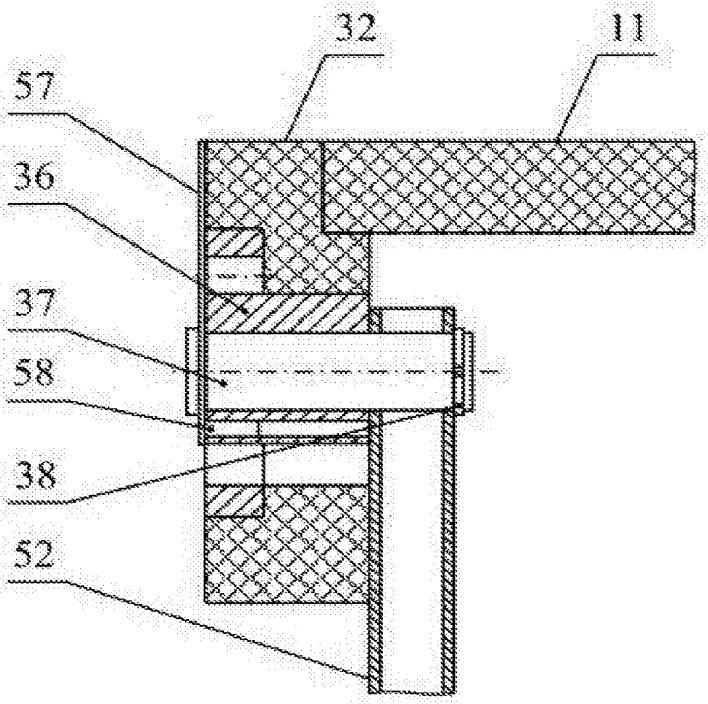


图15

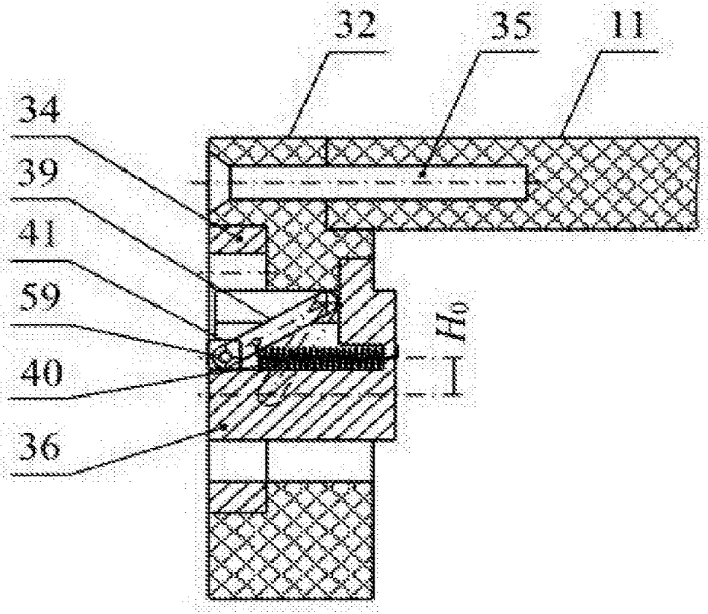


图16

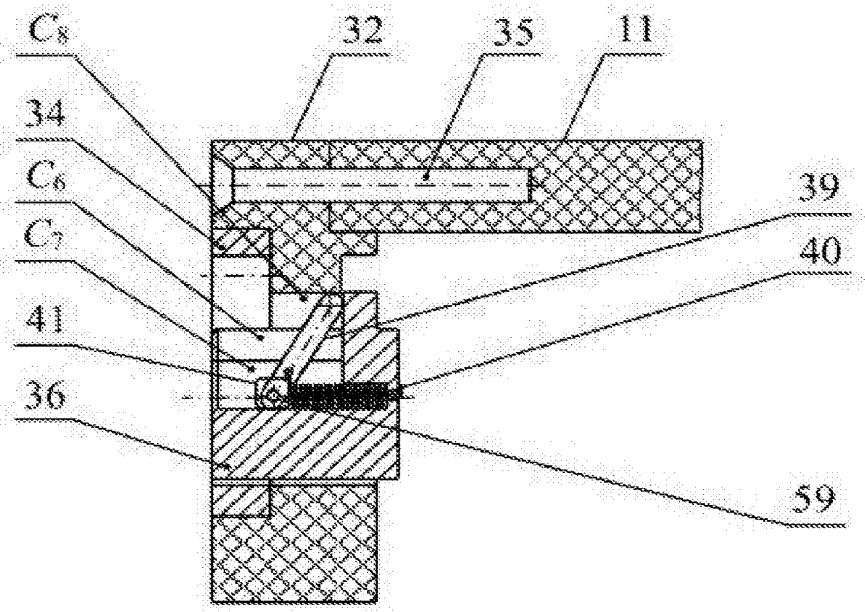


图17

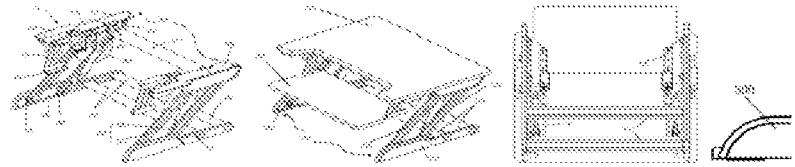
Patents

Lifting table and support structure thereof

Abstract

Provided in the present invention are a support structure and a lifting table, the support structure comprising support assemblies which are oppositely arranged on left and right sides, a top beam assembly, a bottom beam assembly and an auxiliary power component; the top beam assembly comprises a top beam, as well as a first upper connecting portion and a second upper connecting portion which are disposed on a top beam; the bottom beam assembly comprises a bottom beam, as well as a first lower connecting portion and a second lower connecting portion which are disposed on the bottom beam; an upper end of a front beam of the support assembly is hinged to the first upper connecting portion, and a lower end is hinged to the first lower connecting portion, while an upper end of a rear beam of the support assembly is hinged to the second upper connecting portion, and a lower end is hinged to the second lower connecting portion, the front beam, the bottom beam, the rear beam and the top beam forming a parallelogram; a fixed end of the auxiliary power component is hinged to the rear beam and is close to the second lower connecting portion, while a telescopic end of the auxiliary power component is connected to the top beam assembly, the telescopic end being connected to the top beam assembly between the first upper connecting portion and the second upper connecting portion. After a lifting table employs the support structure provided by the present invention, the lifting table may be extended and retracted more freely, having a small floor area, and saving materials.

Images (6)



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Inventor: [redacted]

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- A47B13/02 Underframes

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Claims (20)

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1. A support structure for a lifting table, comprising: a support assembly disposed opposite to the left and right, a top beam assembly disposed opposite to the left and right, a bottom beam assembly disposed opposite to the left and right, and an auxiliary power member disposed opposite to the left and right;

   Each of the top beam assemblies includes a top beam and a first upper connecting portion and a second upper connecting portion disposed on the top beam;

   Each of the bottom beam assemblies includes a bottom beam and a first lower connecting portion and a second lower connecting portion disposed on the bottom beam;

   Each of the support assemblies includes a front beam and a back beam;

   Each of the auxiliary power members has a fixed end and a telescopic end;

   The upper end of the front beam is hinged to the first upper connecting portion, and the lower end is hinged to the first lower connecting portion, and the upper end of the rear beam is hinged to the second upper connecting portion, and the lower end is hinged to the first a second connecting portion, the front beam, the bottom beam, the back beam and the top beam form a parallelogram; a fixed end of the auxiliary power member is hinged on the back beam and adjacent to the second lower connecting portion The telescopic end of the auxiliary power member is coupled to the top beam assembly, and the telescopic end is connected between the first upper connecting portion and the second upper connecting portion as viewed from a side of the lifting table The top beam assembly.

   2. The support structure according to claim 1, further comprising an upper beam, the two ends of the upper beam being coupled to the top beam between the first upper connecting portion and the second upper connecting portion.

   3. The support structure of claim 1 further comprising a lower beam, each of said bottom beam assemblies further comprising a bottom beam extension, said bottom beam extension being coupled to a rear end of said bottom beam, both ends of the lower beam are connected to the bottom beam extension.

   4. A support structure according to any one of claims 1 to 3, wherein each of the top beam assemblies further comprises a fixing member and a top beam protection panel,

      The fixing member is disposed at a top of the top beam for fixing the first table of the lifting table;

      The top beam protection plate is disposed on an outer side of the top beam to cover the first upper connecting portion and the second upper connecting portion.

5. The support structure according to claim 4, wherein said fixing member comprises a horizontal fixing plate and a vertical fixing plate, said vertical fixing plate being connected below to an inner side of said horizontal fixing plate, said auxiliary power The telescoping end of the piece is coupled to the vertical fixed plate for securing the first table top.

6. The support structure of claim 4 wherein each of said top beam assemblies further comprises a suspension.

The suspension is disposed at a front end of the fixing member, the suspension is for fixing a second table of the lifting table, wherein the second table is lower than the first table, and The front end of the second table protrudes from the first table.

7. The support structure according to claim 4, wherein said first table top has a "concave" shape, and a notch-shaped recess of the first table is placed forward, said fixing member extending in the front-rear direction to the front A protruding portion of the first table "concave" shape is described.

8. The support structure according to claim 6, wherein the lower end of the suspension has a hook-like structure, and the hook-shaped structure of the suspension is oppositely disposed for fixing the second table of the lifting table on both sides board.

9. The support structure of claim 3 wherein each of said bottom beam assemblies further comprises a bottom beam shield and a protective sheet.

The bottom beam guard is installed on an outer side of the bottom beam to cover the first lower connecting portion and the second lower connecting portion.

The protective sheet is located outside the bottom beam extension to cover the end surface of the lower beam.

10. A support structure according to claim 3, wherein each of said top beam assemblies further includes a top beam extension connected to the front end of said top beam such that viewed from the side of the lift table The support structure has a "Z" shape.

11. The support structure according to claim 1, wherein a connection point of said telescopic end of said auxiliary power member to said top beam assembly is at a midpoint of an upper side of said parallelogram.

12. The support structure according to claim 1, further comprising a lock switch, the lock switch comprising a wrench, a transmission rod, a paddle, a fixing member and a transmission cable;

The wrench has a fixed end and a movable end;

Wherein the transmission rod is disposed on the top beam assembly and extends in a left-right direction, the fixed end of the wrench is connected to one end of the transmission rod, and the other end of the transmission rod is connected to the pick-up piece Upper end,

Wherein the transmission cable is placed in the front-rear direction, the lower end of the pick-up piece is connected to the front end of the transmission cable, and the rear end of the transmission cable is connected to the telescopic end of the auxiliary power component, the transmission The cable is fixed by the fixing member.

13. The support structure according to claim 12, wherein the cross section at both ends of the transmission rod has a polygonal structure.

14. The support structure according to claim 13, wherein the upper end of the paddle is provided with a through hole, the through hole is a polygonal through hole, and a polygonal structure at both ends of the transmission rod is matched with the polygonal through hole. A lower end of the pick-up piece defines a first keyway, and a front end of the transmission cable is connected to the first keyway.

15. The support structure according to any one of claims 12 to 14, wherein the lock switch further comprises a resilient member;

The resilient member includes a first resilient member and a second resilient member;

The first resilient member is disposed at a front end of the transmission cable and is located between the paddle and the fixing member, and the second resilient member is disposed at a rear end of the transmission cable and Between the telescopic ends of the auxiliary power components.

16. The support structure according to claim 15, wherein said fixing member has a "[]"-shaped structure as viewed from a side of said lifting table, and said top portion of said "[]"-shaped structure is fixed to a lifting table On the first table, the front portion of the "[]"-shaped structure is provided with a second keyway, and the transmission cable is placed in the second keyway.

17. The support structure according to claim 16, wherein the rear portion of the "[]"-shaped structure is provided with an inverted "L"-shaped positioning groove, and the positioning groove has an edge at the edge of the "[]"-shaped structure. An opening is provided to enable the transmission cable to enter and remain in the positioning slot through the opening.

18. The support structure according to claim 17, wherein a rubber protective cover is disposed on an outer circumferential surface of the transmission cable.

19. The support structure according to claim 18, wherein the telescopic end of the auxiliary power member is provided with a cable connecting portion, the cable connecting portion is connected to a rear end of the transmission cable, and the second A resilient member is disposed between the cable connection and the rear end of the drive cable.

20. A lifting table characterized by comprising the support structure according to any one of claims 1-19.

Description

Lifting table and support structure thereof
Technical field

The present invention relates to the field of lift table equipment, and in particular to a support structure for a lift table, and a lift table having the support structure.

Background technique

Due to the needs of modern life and work, many people must maintain a long-term sitting position for focused labor; according to medical research, long-term sitting posture will increase cardiovascular disease, diabetes and obesity; for those who maintain a long sitting position for a single day Will increase its chance of dying from

cardiovascular disease by 50%; maintaining the sitting posture will slow down the circulation of lipase in the human body and reduce the absorption of fat by the human body. When standing, the muscle will promote the action of lipase and promote the treatment of the human body. Fat and cholesterol, which came into being a relatively high workbench used when standing, but the use of high workbench also has the disadvantage of taking up space and increasing costs, which is not necessary for both sitting and using. The standing table is used to solve the corresponding technical problems.

Utility model content

In order to at least partially solve the problem of increasing the cost of the existing work table or the existing space in the workbench, the present invention provides a support structure for a lift table, comprising a support assembly disposed opposite to the left and right, and a top beam assembly disposed opposite to the left and right. a bottom beam assembly disposed oppositely to the left and right and an auxiliary power member disposed opposite each other; each of the top beam assemblies includes a top beam and a first upper connecting portion and a second upper connecting portion disposed on the top beam; each The bottom beam assembly includes a bottom beam and a first lower connecting portion and a second lower connecting portion disposed on the bottom beam; each of the support assemblies includes a front beam and a back beam; each of the auxiliary power members has a fixed An end portion and a telescopic end; wherein an upper end of the front beam is hinged to the first upper connecting portion, a lower end is hinged to the first lower connecting portion, and an upper end of the rear beam is hinged to the second upper connecting portion and a lower end Hinged to the second lower connecting portion, the front beam, the bottom beam, the back beam and the top beam form a parallelogram; the fixed end of the auxiliary power member is hinged on the back beam and adjacent to the a second connecting portion, the telescopic end of the auxiliary power member is coupled to the top beam assembly, and the telescopic end is at the first upper connecting portion and the second upper connecting portion as viewed from a side of the lifting table Connected to the top beam assembly.

Preferably, the support structure further includes an upper beam, and both ends of the upper beam are connected to the top beam between the first upper connecting portion and the second upper connecting portion.

Preferably, the support structure further comprises a lower beam, each of the bottom beam assemblies further comprising a bottom beam extension, the bottom beam extension being connected to a rear end of the bottom beam, both ends of the lower beam Connected to the bottom beam extension.

Preferably, each of the top beam assemblies further includes a fixing member and a top beam protection plate, the fixing member being disposed at a top of the top beam for fixing a first table of the lifting table; the top beam protection plate And disposed on an outer side of the top beam to cover the first upper connecting portion and the second upper connecting portion.

Preferably, the fixing member includes a horizontal fixing plate and a vertical fixing plate connected to an inner side of the horizontal fixing plate at a lower side, and a telescopic end of the auxiliary power member is connected to the vertical fixing a plate for fixing the first table.

Preferably, each of the top beam assemblies further includes a suspension, the suspension is disposed at a front end of the fixing member, and the suspension is configured to fix a second table of the lifting table, wherein the The second table is lower than the first table, and the front end of the second table protrudes from the first table.

Preferably, the first table top is in a "concave" shape, the first table "concave" shaped notch is placed forward, and the fixing member extends in the front-rear direction to the "concave" shape of the first table Part.

Preferably, the lower end of the suspension has a hook-like structure, and the hook-shaped structures of the suspension are oppositely disposed for fixing the second table of the lifting table on both sides.

Preferably, each of the bottom beam assemblies further includes a bottom beam shield and a protective sheet, the bottom beam shield being mounted on an outer side of the bottom beam to cover the first lower connecting portion and the first a lower connecting portion, the protective sheet is located outside the bottom beam extension to cover an end surface of the lower beam.

Preferably, each of the top beam assemblies further includes a top beam extension connected to the front end of the top beam such that the support structure has a "Z" shape when viewed from a side of the lift table.

Preferably, a connection point of the telescopic end of the auxiliary power member and the top beam assembly is at a midpoint of an upper side of the parallelogram.

Preferably, the support structure further includes a lock switch, the lock switch includes a wrench, a transmission rod, a paddle, a fixing member and a transmission cable; the wrench has a fixed end and a movable end; wherein the transmission rod Provided on the top beam assembly and extending in the left-right direction, the fixed

end of the wrench is connected to one end of the transmission rod, and the other end of the transmission rod is connected to the upper end of the paddle, wherein The transmission cable is placed in the front-rear direction, the lower end of the pick-up piece is connected to the front end of the transmission cable, the rear end of the transmission cable is connected to the telescopic end of the auxiliary power component, and the transmission cable is provided by the The fixing member is fixed.

Preferably, the cross section at both ends of the transmission rod has a polygonal structure.

Preferably, the upper end of the pick-up piece is provided with a through hole, the through-hole is a polygonal through-hole, a polygonal structure at both ends of the transmission rod is matched with the polygonal through-hole, and a lower end of the pick-up piece defines a first key groove. The front end of the transmission cable is connected to the first keyway.

Preferably, the lock switch further includes a rebounding member; the resilient member includes a first resilient member and a second resilient member; the first resilient member is disposed at a front end of the transmission cable, and Located between the paddle and the fixing member, the second resilient member is disposed between a rear end of the transmission cable and a telescopic end of the auxiliary power member.

Preferably, the fixing member has a "[]"-shaped structure from the side of the lifting table, and the top of the "[]"-shaped structure is fixed to the first table of the lifting table, the "[]" The front portion of the structure is provided with a second keyway, and the transmission cable is inserted into the second keyway.

Preferably, the rear portion of the "[]"-shaped structure is provided with an inverted "L"-shaped positioning groove, and the positioning groove has an opening at an edge of the "[]"-shaped structure to enable the transmission cable to pass The opening enters and remains in the positioning slot.

Preferably, a rubber protective sleeve is disposed on an outer circumferential surface of the transmission cable.

Preferably, the telescopic end of the auxiliary power member is provided with a cable connection portion, the cable connection portion is connected to a rear end of the transmission cable, and the second resilient member is disposed at the cable connection portion. Between the rear end of the transmission cable.

According to another aspect of the present invention, there is also provided a lift table comprising any of the support structures described above.

The support structure provided by the invention has a parallelogram structure as a whole, which not only solves the problem of occupying space existing in the existing

work table or the work table, but also increases the cost; and the auxiliary component forms an auxiliary tension effect by the auxiliary power component, and at the same time, the auxiliary The support point of the power component is located on the upper side of the parallelogram, and the support cushioning effect is excellent, and it can be retracted freely. Since the vertical descending gravity greatly causes the risk of pinching, the lifting table adopts the supporting structure of the invention, not only can prevent the risk of pinching, but also does not generate noise when stowed, which brings convenience to the user; for the user After sitting for a long time, the lifting table is propped up, and working through the standing state can effectively alleviate the discomfort and achieve the technical effect of relaxing the body.

The lock switch structure provided by the utility model can not only solve the problem that the design of the existing work table or the work table is unreasonable, and the take-off and landing state is unstable; and the use of the lock switch structure can maintain the lift table during use. In the fixed state, when the user closes the lifting table, the lifting table is completed by the interlocking action of the locking switch structure, saving labor and trouble, the action is completed in one go, and no noise is generated when stowed; in addition, the lifting table is based on the lock switch structure and the auxiliary power The function of the piece can also be automatically raised without human intervention, which is convenient and quick to deploy, and brings convenience to the user.

A series of simplified forms of concepts are introduced in the context of the present invention, which will be described in further detail in the Detailed Description section. The present invention is not intended to limit the key features and essential technical features of the claimed embodiments, and is not intended to limit the scope of protection of the claimed embodiments.

The advantages and features of the present invention are described in detail below with reference to the accompanying drawings.

DRAWINGS

The following drawings of the present invention are used herein as part of the present invention to understand the present invention. The embodiments of the invention and the description thereof are shown in the drawings in the drawing,

Figure 1 is a perspective view of the lift table (with the table removed) in an unfolded state of the present invention;

Figure 2 is a perspective view of the lift table of the present invention in an unfolded state;

Figure 3 is a bottom plan view of the lift table of Figure 2 of the present invention;

Figure 4 is a side view of the lift table of the present invention in a stowed state;

Figure 5 is an exploded view of the upper part of the lifting table of the present invention;

Figure 6 is a bottom exploded view of the lift table of the present invention.

Detailed ways

In the following description, numerous details are provided in order to provide a thorough understanding of the invention. However, those skilled in the art will appreciate that the following description relates only to the preferred embodiments of the present invention, which may be implemented without one or more such details. Moreover, in order to avoid confusion with the present invention, some of the technical features well known in the art are not described.

According to an aspect of the invention, a support structure for a lift table is provided. The support structure of the present invention adopts a parallelogram shape, and the parallelogram support structure has an advantage over the prior art in that when the user feels fatigue after sitting for a long time, the height of the lift table can be raised by the support structure, and the user stands by The state carries out the desk work to relieve the soreness of the waist. The auxiliary power piece can lift the table top at a constant speed, and the support structure is freely retractable, beautiful in appearance, rich in the sense of the times, and occupying a small space.

Figures 1-6 illustrate, from various angles, the entirety of a support structure and various components or portions included in the support structure in accordance with one embodiment of the present invention. In order to understand the position and function of these components or portions in the support structure, the support structure is first described in its entirety to provide a thorough understanding of the present invention.

As shown in FIG. 1-6, the support structure for the lift table 10 provided by the present invention includes a support assembly 200 disposed opposite to the left and right, a top beam assembly 600 disposed opposite to the left and right, a bottom beam assembly 300 disposed opposite to the left and right, and left and right relative settings. Auxiliary power unit 500. A table top is mounted on top of the support structure to form a lift table.

Each top beam assembly 600 includes a top beam 620, and a first upper connection portion 610 and a second upper connection portion 660 disposed on the top beam 620, see FIGS. 1 and 5.

Each of the sill assembly 300 includes a bottom beam 320, and a first lower connection portion 340 and a second lower connection portion 350 disposed on the bottom sill 320, see FIGS. 1 and 6.

Each support assembly 200 includes a front beam 210 and a back beam 220.

Each of the auxiliary power members 500 has a fixed end 520 and a telescopic end 510. The auxiliary power unit 500 can employ a common gas spring.

The upper end of the front beam 210 is hinged to the first upper connecting portion 610, and the lower end of the front beam 210 is hinged to the first lower connecting portion 340. The upper end of the rear beam 220 is hinged to the second upper connecting portion 660, and the lower end of the rear beam 220 is hinged to the second lower portion. The connecting portion 350, the front beam 210, the bottom beam 320, the rear beam 220, and the top beam 620 integrally form a parallelogram. Illustratively, the two ends of the front beam 210 are between the first upper connecting portion 610 and the second upper connecting portion 660, and/or both ends of the back beam 220 and the first lower connecting portion 340 and the second lower connecting portion 350 The connection can be made by pin.

The fixed end 520 of the auxiliary power member 500 is hinged to the rear beam 220 and adjacent to the second lower connecting portion 350. The telescoping end of the auxiliary power unit 500 is coupled to the top beam assembly 600. The telescopic end 510 of the auxiliary power member 500 is coupled to the top beam assembly 200 between the first upper connecting portion 610 and the second upper connecting portion 660 as seen from the side of the lift table. Preferably, the connection point of the telescopic end 510 of the auxiliary power member 500 to the top beam assembly 200 is at the midpoint of the upper side of the parallelogram. When the telescopic end 510 of the auxiliary power component 500 is connected thereto, the force is most uniform, which ensures that the top beam assembly 200 does not shake forward and backward when it is jacked up, so that the articles placed on the first table 700 are not shaken, so that they can be used. The lifting table 10 is safer and more reliable.

Preferably, the support structure further includes an upper cross member 670. The upper beam 670 can be one or more. The two top beam assemblies 600 are connected by an upper cross member 670 to stabilize the overall support structure. Both ends of the upper beam 670 are connected to the top beam 620 between the

first upper connecting portion 610 and the second upper connecting portion 660. Illustratively, the cross section of the upper beam 670 can be oblong. The upper beam 670 and the top beam 620 can be locked by threaded fasteners.

Preferably, the support structure further includes a lower beam 400. The lower beam 400 can be one or more. Each sill assembly 300 also includes a sill extension 360, see FIG. The bottom beam extension 360 is coupled to the rear end of the bottom beam 320. The lower cross member 400 is coupled between the bottom beam extensions 360 to stabilize the overall support structure. Illustratively, the cross section of the lower beam 400 may be oblong. Both ends of the lower beam 400 can be inserted into corresponding grooves in the bottom beam extension 360. Alternatively, the lower cross member 400 can also be coupled to the sill assembly 300 by threaded fasteners or other means. Preferably, the lower beam 400 is plural, and the plurality of lower beams 400 may be arranged in parallel with each other. Alternatively, the plurality of lower beams 400 may also be arranged in a cross, for example, the two lower beams are arranged in an "X" shape.

Preferably, each top beam assembly 600 also includes a top beam extension 690, see also Figures 1 and 5. A top beam extension 690 is coupled to the front end of the top beam 620. Since the rear end of the bottom beam 320 is also connected to the bottom beam extension 360, the support structure has a "Z" shape as seen from the side of the lift table, which is preferably shown in FIG. The Z-shaped support structure has good stability, and the support structure can be made stronger by providing the upper beam and the lower beam.

Preferably, each top beam assembly 600 can include a securing member 680 and a top beam protection panel 630 in addition to the top rail 620, as shown in FIG. A fixing member 680 is provided at the top of the top beam 620 for securing the first table 700 of the lift table. The lift table 700 can include a first table top 700 and a second table top 800. The first tabletop 700 is typically used to place a display of a laptop or desktop computer, and the like. The second table 800 is typically used to place a keyboard or the like. The second table 800 is lower than the first table 700. Illustratively, the fixing members 680 may be symmetrically disposed on the left and right sides. The first table top 700 can be fixed to the top of the fixing member 680. The first table 700 preferably covers the top beam assembly 600 as viewed from above the lift table. The first upper connecting portion 610 and the second upper connecting portion 660 are disposed on the top beam 620, and the top beam protection plate 630 is disposed outside the top beam 620 to cover the first upper connecting portion 610 and the second upper connecting portion 660.

Illustratively, the securing member 680 can include a horizontal securing plate 682 and a vertical securing plate 684, see FIG. The vertical fixing plate 684 is connected to the inner side of the horizontal fixing plate 682 at the lower side. It should be noted that the "inside" and "outside" mentioned herein are relative to the lifting table. For example, the side facing the outside of the lifting table is called the outer side, and the side facing the inside of the lifting table is called the inner side. . The telescopic end of the auxiliary power member 500 is coupled to the vertical fixing plate 684. The horizontal fixing plate 682 is for fixing the first table 700.

Preferably, each top beam assembly 200 can also include a suspension 640 for securing the second table top 800. The suspension 640 may be disposed at a front end of the fixing member 680. The upper end of the suspension 640 may be fixed to the lower surface of the first table 700. The second table 800 can be secured to the lower end of the suspension 640. Optionally, the lower end of the suspension 640 has a hook structure 650, and the hook structures 650 of the two suspensions 640 are oppositely disposed for fixing the second table 800 of the lifting table on both sides.

When two table tops are provided, preferably, the first table top 700 may be "concave" shaped with the "concave" shaped notches of the first table top 700 placed forward. The fixing member 610 extends in the front-rear direction to a "concave"-shaped protruding portion of the first table 700. Preferably, the front end of the second table 800 protrudes from the first table. Illustratively, the second table 800 can be "convex" shaped with the small end of the second table 800 placed rearward. Suspension 640 secures second table 800 on both sides of the small end.

Preferably, each of the bottom beam assemblies 300 may include a bottom beam shield 310 and a protective sheet 330 in addition to the bottom beam 320. The sill guard 310 is mounted on the outside of the bottom beam 320 to cover the first lower connecting portion 340 and the second lower connecting portion 350. The protective sheet 330 is located outside the bottom beam extension 360 to cover the end surface of the lower beam 400. Typically, both ends of the lower beam 400 and the bottom beam extension 360 are locked by threaded fasteners. The protective sheet 330 can cover the end faces of the lower beam 400 and the threaded fasteners to make the appearance flat.

In a preferred embodiment, a cushioning spacer is disposed between the front beam 210 and the rear beam 220. When the supporting structure is stowed, the cushioning gasket can prevent the noise caused by the collision of the front beam 210 and the rear beam 220, and can protect the device from the noise. Damage while avoiding the risk of pinching.

In order to be able to make the operation of the lifting table more secure and reliable, preferably the support structure further comprises a locking switch. In the illustrated embodiment, a lock switch 900 is provided on each side of the top beam assembly 600. However, alternatively, the lock switch 900 can be provided to only one side of the top beam assembly 600. The lock switch 900 will be described in detail below.

The lock switch 900 can include a wrench 910, a drive rod 920, a paddle 930, a fixture 970, and a drive cable 950, see FIG.

The wrench 910 has a fixed end and a movable end. Depending on the external force, the movable end of the wrench 910 can be moved between the locked position and the active position. The transmission rod 920 is disposed on the top beam assembly 600 and extends in the left-right direction. The drive rod 920 can pass through the top beam assembly 600 in the left and right direction to maintain its position by the top beam assembly 600. The fixed end of the wrench 910 is coupled to one end of the transmission rod 920, and the other end of the transmission rod 920 is coupled to the upper end of the paddle 930. The transmission cable 950 is placed in the front-rear direction, the lower end of the paddle 930 is connected to the front end of the transmission cable 950, and the rear end of the transmission cable 950 is connected to the telescopic end 510 of the auxiliary power member. The drive cable 950 is held in its position by the fixture 970.

Preferably, the cross section at both ends of the transmission rod 920 has a polygonal structure. Illustratively, the cross-sectional shape of the two ends of the transmission rod 920 may be a triangle, a diamond shape or a square shape. The shape of the two ends of the transmission rod 920 can better transmit the force between the wrench and the paddle without causing the transmission failure.

Preferably, the upper end of the paddle 930 is provided with a through hole, and the through hole is preferably a polygonal through hole. The polygonal structure at both ends of the transmission rod 920 is matched with the polygonal through hole, and the first key groove is opened at the lower end of the paddle 930 to drive the steel cable 950. The front end is connected to the first keyway.

Preferably, the lock switch 900 further includes a resilient member. The resilient member includes a first resilient member 940 and a second resilient member 960. The first resilient member 940 is disposed at the front end of the transmission cable 950 and is located between the paddle 930 and the fixed member 970. The second resilient member 960 is disposed at the rear end of the transmission cable 950 and the telescopic end of the auxiliary power member 500, between. The first resilient member 940 and the second resilient member 960 can employ a spring or a rebound paddle.

Preferably, the fixing member 970 has a "[]"-shaped structure as seen from the side of the lift table, as shown in FIGS. 1 and 5. The top of the "[]"-shaped structure is fixed to the first table top 700, and the front portion of the "[]"-shaped structure is provided with a second keyway, and the transmission cable 950 is placed in the second key groove. Preferably, the rear portion of the "[]"-shaped structure is provided with an inverted "L"-shaped positioning groove having an opening at the edge of the "[]"-shaped structure. In this way, the drive cable can enter the positioning groove through the opening and remain in the positioning groove.

Preferably, the outer circumferential surface of the transmission cable 950 is provided with a rubber protective cover.

Preferably, the telescopic end 510 of the auxiliary power member is provided with a cable connection portion, the cable connection portion is connected to the rear end of the transmission cable 950, and the second rebound member 960 is disposed behind the cable connection portion and the transmission cable 500 between the ends.

Preferably, the movable end of the wrench 910 is an elliptical polished structure. By polishing the structure, the risk of scratching when used by the user is prevented, and the user experience is improved.

It should be noted that the orientation terms related to the lifting table referred to herein, such as "high", "low", "front", "back", "left", "right", "upper" and "lower", etc. Both are in a state shown in FIG. 2 with respect to the lift table, that is, a state in which the second table 800 faces the user.

Based on the above-described lock switch, when the rotary wrench 910 simultaneously applies a downward force to the first table 700, the angle between the front beam 210 and the rear beam 220 and the bottom beam assembly 300 is reduced, the auxiliary power member 500 is compressed, and the lift table is The overall height is lowered to meet the sitting posture; and when the lifting table is in the stowed state, the transmission cable 950 causes the auxiliary power member 500 to be in a locked state. When the table is to be raised, the wrench 910 can be rotated to drive the transmission cable 950 to release the self-locking function of the auxiliary power member 500. Under the action of the auxiliary power member 500, between the front beam 210 and the rear beam 220 and the bottom beam assembly 300 As the angle increases, the overall height of the lift table rises to meet the standing position.

The locking switch can maintain the fixed state of the lifting table during use. When the user folds up the lifting table, the lifting table is stored by the interlocking action of the locking switch, which saves labor and troubles, and the action is completed in one go, and does not generate when the stowage is completed. Noise; In addition, the lifting table is also able to automatically rise based on the function of the locking switch and the auxiliary power unit, without human intervention, and is convenient and quick to deploy, which brings convenience to the user.

According to another aspect of the present invention, there is also provided a lift table which may have a first table; or a first table and a second table. In addition, the lift table has a support structure as described above.

The present invention has been described by the above embodiments, but it should be understood that the above-described embodiments are only for the purpose of illustration and description. In addition, those skilled in the art can understand that the present invention is not limited to the above embodiments, and various modifications and changes can be made according to the teachings of the present invention. These modifications and modifications fall within the scope of the present invention. Within the scope of the claimed protection. The scope of protection of the present invention is defined by the appended claims and their equivalents.

Patent Citations (5)

Publication number	Priority date	Publication date	Assignee	Title
CN205493003U *	2016-03-06	2016-08-24	申为逵	Can sit upright alternate use's computer desk
CN205986096U *	2016-06-14	2017-03-01	陈亚迪	A kind of desktop lifting type computer desk
CN206006417U *	2016-07-05	2017-03-15	昆山奇器数码科技有限公司	Gas spring lifting mechanism
CN206166181U *	2016-08-16	2017-05-17	常州变形元素升降桌制造有限公司	Manual lift table
CN107307587A *	2017-06-28	2017-11-03	陈工	Same table and its supporting construction
Family To Family Citations				

* Cited by examiner, † Cited by third party

Cited By (1)

Publication number	Priority date	Publication date	Assignee	Title
US11134773B1 *	2015-01-24	2021-10-05	Office Kick, Inc.	Desktop workspace that adjusts vertically
Family To Family Citations				

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
WO2017045506A1	2017-03-23	Elevation working platform
US20180055214A1	2018-03-01	Height-adjustable desk
US6298794B1	2001-10-09	Ergonomic computer workstation
US20150289641A1	2015-10-15	Height adjustable desktop work surface
US10842282B2	2020-11-24	Height adjustable desk for placing on an existing desktop
US8276525B2	2012-10-02	Height-adjustable equipment stand
WO2019001506A1	2019-01-03	Lifting table and support structure thereof

KR200479292Y1	2016-01-12	A standing table
JP3202243U	2016-01-28	Folding seat
CN107951174B	2020-12-18	Multifunctional lifting table
CN109043813A	2018-12-21	Height-adjustable computer desk
WO2019001507A1	2019-01-03	Lifting table and support structure thereof
CN107307587A	2017-11-03	Same table and its supporting construction
JP3206215U	2016-09-08	Standing table
DE202008016812U1	2009-03-26	Seating furniture with extendable footrest
CN111887655A	2020-11-06	Electric bed
CN207912359U	2018-09-28	Same table and its locking mechanism
WO2020082697A1	2020-04-30	180 degree flipping hidden sofa bunk bed
CN109363355A	2019-02-22	A kind of workbench with computer bracket
US9867468B2	2018-01-16	Adjustable chair
CN210617941U	2020-05-26	Bus seat with height-adjustable table plate
CN103494442A	2014-01-08	Multifunctional bed desk
CN204210344U	2015-03-18	A kind of automobile and front-row seats thereof
CN210248957U	2020-04-07	Combined office table for computer
CN209628967U	2019-11-15	A kind of height-adjustable computer desk

Priority And Related Applications

Priority Applications (4)

Application	Priority date	Filing date	Title
CN201720764515.8U	2017-06-28	2017-06-28	Same table and its locking switch structure
CN201710509508.8A	2017-06-28	2017-06-28	Same table and its supporting construction
CN201710509508.8		2017-06-28	
CN201720764515.8		2017-06-28	

Legal Events

Date	Code	Title	Description
2019-02-13	121	Ep: the epo has been informed by wipo that ep was designated in this application	**Ref document number:** 18823605 **Country of ref document:** EP **Kind code of ref document:** A1
2019-12-31	NENP	Non-entry into the national phase	**Ref country code:** DE
2020-08-12	122	Ep: pct application non-entry in european phase	**Ref document number:** 18823605 **Country of ref document:** EP **Kind code of ref document:** A1

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
assembly		claims,abstract,description	18	0.000

≈ biological transmission	claims,description	56	0.000
≈ suspension	claims,description	17	0.000
≈ protective	claims,description	10	0.000

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(12) 按照专利合作条约所公布的国际申请

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(54) Title: LIFTING TABLE AND SUPPORT STRUCTURE THEREOF

(54) 发明名称：升降桌及其支撑结构

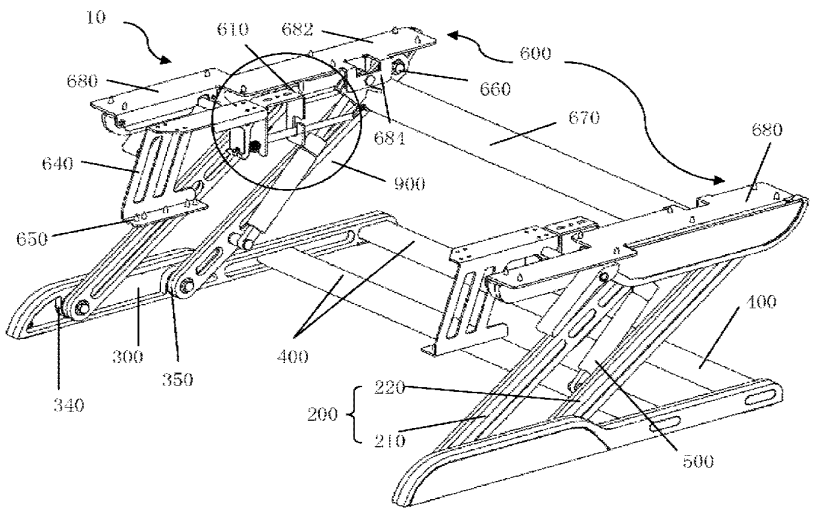


图 1

(57) Abstract: Provided in the present invention are a support structure and a lifting table, the support structure comprising support assemblies which are oppositely arranged on left and right sides, a top beam assembly, a bottom beam assembly and an auxiliary power component; the top beam assembly comprises a top beam, as well as a first upper connecting portion and a second upper connecting portion which are disposed on a top beam; the bottom beam assembly comprises a bottom beam, as well as a first lower connecting portion and a second lower connecting portion which are disposed on the bottom beam; an upper end of a front beam of the support assembly is hinged to the first upper connecting portion, and a lower end is hinged to the first lower connecting portion, while an upper

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WO 2019/001506 A1

MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW。

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end of a rear beam of the support assembly is hinged to the second upper connecting portion, and a lower end is hinged to the second lower connecting portion, the front beam, the bottom beam, the rear beam and the top beam forming a parallelogram; a fixed end of the auxiliary power component is hinged to the rear beam and is close to the second lower connecting portion, while a telescopic end of the auxiliary power component is connected to the top beam assembly, the telescopic end being connected to the top beam assembly between the first upper connecting portion and the second upper connecting portion. After a lifting table employs the support structure provided by the present invention, the lifting table may be extended and retracted more freely, having a small floor area, and saving materials.

(57) 摘要：本发明提供一种支撑结构和升降桌，支撑结构包括左右相对设置的支撑组件、顶梁组件、底梁组件和辅助动力件；顶梁组件包括顶梁以及设置在顶梁上的第一上连接部和第二上连接部；底梁组件包括底梁和设置在底梁上的第一下连接部和第二下连接部；支撑组件的前梁的上端铰接于第一上连接部、下端铰接于第一下连接部，支撑组件的后梁的上端铰接于第二上连接部、下端铰接于第二下连接部，前梁、底梁、后梁和顶梁形成平行四边形；辅助动力件的固定端铰接于后梁上且靠近第二下连接部，辅助动力件的伸缩端连接于顶梁组件上，且伸缩端在第一上连接部和第二上连接部之间连接于顶梁组件。升降桌采用本发明提供的支撑结构后，收放更加自如，占地面积小，节省材料。

升降桌及其支撑结构

技术领域

本发明涉及升降桌设备领域，具体地，涉及一种用于升降桌的支撑结构，和具有该支撑结构的升降桌。

背景技术

由于现代生活和工作的需要，许多人必须維持长时间坐姿进行专注性劳动；根据医学研究，长时间的坐姿会增加心血管疾病、糖尿病以及肥胖等；对于单日維持长时间坐姿的人来说，将会增加其百分之五十死于心血管疾病的机率；由于維持坐姿会减緩人体中脂肪酶的循环，减少人体对脂肪的吸收，而站立时肌肉会促进脂肪酶作招，促使人体处理脂肪与胆固醇，这就应运而生了站立时使用的相对较高的工作台，但是高工作台的使用也产生了占用空间、成本增力如的弊端，这就亟需既能用于坐姿又能用于站姿的升降桌以解决相应的技术问题。

实用新型内容

为了至少部分地解决现有工作桌或者工作台中存在的占用空间，成本增加的问题，本发明提供一种用于升降桌的支撑结构，包括左右相对设置的支撑组件、左右相对设置的顶梁组件、左右相对设置的底梁组件和左右相对设置的辅助动力件；每个所述顶梁组件包括顶梁以及设置在所述顶梁上的第一上连接部和第二上连接部；每个所述底梁组件包括底梁和设置在所述底梁上的第一下连接部和第二下连接部；每个所述支撑组件包括前梁和后梁；每个所述辅助动力件具有固定端和伸缩端；其中，所述前梁的上端铰接于所述第一上连接部、下端铰接于所述第一下连接部，所述后梁的上端铰接于所述第二上连接部、下端铰接于所述第二下连接部，所述前梁、所述底梁、所述后梁和所述顶梁形成平行四边形；所述辅助动力件的固定端铰接于所述后梁上且靠近所述第二下连接部，所述辅助动力件的伸缩端连接于所述顶梁组件上，且从升降桌的倒面看，所述伸縮端在所述第一上

连接部和所述第二上连接部之间连接于所述顶梁组件。

优选地，所述支撑结构还包括有上横梁，所述上横梁的两端在所述第一上连接部和第二上连接部之间连接至所述顶梁。

优选地，所述支撑结构还包括有下横梁，每个所述底梁组件还包括底梁延伸部，所述底梁延伸部连接至所述底梁的后端，所述下横梁的两端连接至所述底梁延伸部。

优选地，每个所述顶梁组件还包括固定构件和顶梁保护板，所述固定构件设置于所述顶梁的顶部，用于固定升降桌的第一桌板；所述顶梁保护板设置于所述顶梁的外侧，以封盖住所述第一上连接部和所述第二上连接部。

优选地，所述固定构件包括水平固定板和竖直固定板，所述竖直固定板在下方连接至所述水平固定板的内侧，所述辅助动力件的伸缩端连接至所述竖直固定板，所述水平固定板用于固定所述第一桌板。

优选地，每个所述顶梁组件还包括悬架，所述悬架设置在所述固定构件的前端，所述悬架用于固定所述升降桌的第二桌板，其中，所述第二桌板低于所述第一桌板，且所述第二桌板的前端突出于所述第一桌板。

优选地，所述第一桌板为"凹"形，第一桌板"凹"形的缺口向前放置，所述固定构件沿前后方向延伸到所述第一桌板"凹"形的突出部位。

优选地，所述悬架的下端具有钩状结构，所述悬架的钩状结构相对设置，用于在两侧固定所述升降桌的第二桌板。

优选地，每个所述底梁组件还包括底梁护板和保护片，所述底梁护板安装在所述底梁的外侧，以封盖住所述第一下连接部和所述第二下连接部，所述保护片位于所述底梁延伸部的外侧，以封盖所述下横梁的端面。

优选地，每个所述顶梁组件还包括顶梁延伸部，所述顶梁延伸部连接至所述顶梁的前端，使得从升降桌的侧面看所述支撑结构呈"Z"形。

优选地，所述辅助动力件的所述伸缩端与所述顶梁组件的连接点在所述平行四边形的上边的中点上。

优选地，所述支撑结构还包括镇紧开关，所述锁紧开关包括扳手、传动轩、拨片、固定件和传动钢索；所述扳手具有固定端和活动端；其中，所述传动轩设置在所述顶梁組件上，且沿左右方向延伸，所述扳手的固定

端连接于所述传动杆的一端 ,所述传动杆的另一端连接于所述拨片的上端 ,其中 ,所述传动钢索沿前后方向放置 ,所述拨片的下端连接于所述传动钢索的前端 ,所述传动钢索的后端连接于所述辅助动力件的伸缩端 ,所述传动钢索由所述固定件固定。

优选地 ,所述传动杆两端的截面为多边形结构。

优选地 ,所述拨片上端设置过孔 ,所述过孔为多边形过孔 ,所述传动杆两端的多边形结构与所述多边形过孔相契合 ,所述拨片的下端开设第一键槽 ,所述传动钢索的前端连接于所述第一键槽。

优选地 ,所述锁紧开关还包括回弹部件 ;所述回弹部件包括第一回弹部件和第二回弹部件 ;所述第一回弹部件设置在所述传动钢索的前端 ,并且位于所述拨片和所述固定件之间 ,所述第二回弹部件设置在所述传动钢索的后端和所述辅助动力件的伸缩端之间。

优选地 ,从所述升降桌的侧面看 ,所述固定件具有 "门" 形结构 ,所述 "门" 形结构的顶部¾于固定在升降桌的第一桌板上 ,所述 "门" 形结构的前部开设有第二键槽 ,所述传动钢索置入所述所述第二键槽内。

优选地 ,所述 "门" 形结构的后部开设有倒 "L" 形的定位槽 ,所述定位槽在所述 "门" 形结构的边缘具有开口 ,以使所述传动钢索能够通过所述开口进入并保持在所述定位槽中。

优选地 ,所述传动钢索的外周面上设置有橡塑保护套。

优选地 ,所述辅助动力件的伸缩端设置有钢索连接部 ,所述钢索连接部连接于所述传动钢索的后端 ,所述第二回弹部件设置在所述钢索连接部和所述传动钢索的后端之间。

根据本发明的另一个方面 ,还提供一种升降桌 ,包括如上所述的任一种支撑结构。

本发明提供的支撑结构整体为平行四边形结构 ,其不仅能解决现有工作桌或者工作台中存在的占用空间 ,成本增加的问题 ;且由于支撑组件通过辅助动力件形成辅助张力作用 ,同时 ,该辅助动力件支撑点位于平行四边形的上边 ,支撑緩冲效果极好 ,收放自如。由于垂直下降重力极大容易造成夹伤风险 ,升降桌采用本发明的支撑结拘后 ,不但能防止夹伤风险 ,同时收起时不会产生噪音 ,给用户使用带来了方便 ;对于用户来说久坐之

后将升降桌撑起，通过站立状态进行工作能够有效缓解身体不适，达到身体放松的技术效果。

本实用新型提供的锁紧开关结构其不仅能解决现有工作桌或者工作台中存在的设计不合理，起降状态不稳的问题；且使用该锁紧开关结构能够在使用过程中保持升降桌的固定状态，¾户收起升降桌时，通过锁紧开关结构的联动作用将升降桌收纳完成，省力省事，动作一气呵成，同时收起时不会产生噪音；此外升降桌基于锁紧开关结构和辅助动力件的作用，还能够自动上升，无需人为干预，展开时方便快捷，给用户使¾带来了方便。

在实用新型内容中引入了一系列简化形式的概念，这将在具体实施方式部分中进一步详细说明。本实用新型内容部分并不意味着要试图限定出所要求保护的技术方案的关键特征和必要技术特征，更不意味着试图确定所要求保护的技术方案的保护范围。

以下结合附图，详细说明本实用新型的优点和特征。

附图说明

本实用新型的下列附图在此作为本实用新型的一部分用于理解本实用新型。附图中示出了本实用新型的实施方式及其描述，用来解释本实用新型的原理。在附图中，

图 1 为本实用新型的升降桌 (去掉桌板) 处于展开状态的立体图；

图 2 为本实用新型的升降桌处于展开状态的立体图；

图 3 为图 2 中本实用新型的升降桌的仰视图；

图 4 为本实用新型的升降桌处于收纳状态的侧视图；

图 5 为本实用新型的升降桌的上部爆炸图；

图 6 为本实用新型的升降桌的下部爆炸图。

具体实施方式

在下文的描述中，提供了大量的细节以便能够彻底地理解本实用新型。然而，本领域技术人员可以了解，如下描述仅涉及本实用新型的较佳实施例，本实用新型可以无需一个或多个这样的细节而得以实施。此外，为了避免与本实用新型发生混淆，对于本领域公知的一些技术特征未进行描述。

根据本发明的一个方面，提供一种用于升降桌的支撑结构。本发明的支撑结构采用平行四边形，平行四边形的支撑结构相比于现有技术的俛势在于：当使用者久坐之后感到疲劳，通过该支撑结构能够使升降桌的高度升高，使用者通过站立状态进行案头工作，緩解腰部酸痛，其中的辅助动力件能够将桌板匀速顶起，而且该支撑结构收放自如，外形美观、富于时代感，而且占用空间小。

图 1—6 从各个角度示出了根据本发明的一个实施例的支撑结构的整体以及该支撑结构所包含的各个部件或部分。为了了解这些部件或者部分在支撑结构中的位置和所起的作用，首先对支撑结构进行整体性描述，以便彻底地理解本实用新型。

如图 1-6 所示，本发明提供的用于升降桌 10 的支撑结构包括左右相对设置的支撑组件 200、左右相对设置的顶梁组件 600、左右相对设置的底梁组件 300 和左右相对设置的辅助动力件 500。桌板安装在该支撑结构的顶部，形成升降桌。

每个顶梁组件 600 包括顶梁 620、以及设置在该顶梁 620 上的第一上连接部 610 和第二上连接部 660，参见图 1 和图 5。

每个底梁组件 300 包括底梁 320、以及设置在该底梁 320 上的第一下连接部 340 和第二下连接部 350，参见图 1 和图 6。

每个支撑组件 200 包括前梁 210 和后梁 220。

每个辅助动力件 500 具有固定端 520 和伸縮端 510。辅助动力件 500 可以采用常见的气弹簧。

其中，前梁 210 的上端铰接于第一上连接部 610、前梁 210 下端铰接于第一下连接部 340，后梁 220 的上端铰接于第二上连接部 660、后梁 220 下端铰接于第二下连接部 350，前梁 210、底梁 320、后梁 220 和顶梁 620 整体形成平行四边形。示例性地，前梁 210 的两端与第一上连接部 610 和第二上连接部 660 之间，和/或后梁 220 的两端与第一下连接部 340 和第二下连接部 350 之间可以通过销连接。

辅助动力件 500 的固定端 520 铰接于后梁 220 上且靠近第二下连接部 350。辅助动力件 500 的伸缩端连接于顶梁组件 600 上。从升降桌的侧面看，辅助动力件 500 的伸縮端 510 在第一上连接部 610 和第二上连接部 660 之

间连接至顶梁组件 200。优选地，辅助动力件 500 的伸缩端 510 与顶梁组件 200 的连接点在平行四边形的上边的中点上。辅助动力件 500 的伸缩端 510 连接至该处时受力最均匀，保证将顶梁组件 200 顶起时不会发生前后摇动，使第一桌板 700 放置的物品不发生晃动，从而能够在使用升降桌 10 时更加安全可靠。

优选地，该支撑结构还包括上横梁 670。上横梁 670 可以为一个或多个。两个顶梁组件 600 之间通过上横梁 670 连接，以使支撑结构的整体稳定。上横梁 670 的两端在第一上连接部 610 和第二上连接部 660 之间连接至顶梁 620。示例性地，上横梁 670 的横截面可以为长椭圆形。上横梁 670 与顶梁 620 之间可以通过螺纹紧固件来锁紧。

优选地，该支撑结构还包括有下横梁 400。下横梁 400 可以为一个或多个。每个底梁组件 300 还包括底梁延伸部 360，参见图 6。底梁延伸部 360 连接至底梁 320 的后端。下横梁 400 连接在底梁延伸部 360 之间，以使支撑结构的整体稳定。示例性地，下横梁 400 的横截面可以为长椭圆形。下横梁 400 的两端可以插合在底梁延伸部 360 上相应的沟槽中。可选地，下横梁 400 也可以通过螺纹紧固件或者其弛方式连接至底梁组件 300。优选地，下横梁 400 为多个，多个下横梁 400 可以相互平行地布置。或者，多个下横梁 400 也可以交叉布置，例如两根下横梁布置成 "X" 形。

优选地，每个顶梁组件 600 还包括顶梁延伸部 690，同时参见图 1 和 5。顶梁延伸部 690 连接至顶梁 620 的前端。由于底梁 320 的后端也连接有底梁延伸部 360，使得从升降桌的侧面看，支撑结构呈 "Z" 形，图 1 较佳地示出。Z 形的支撑结构具有良好的稳定性，通过设置上横梁和下横梁，还能够使得支撑结构更加牢固。

优选地，每个顶梁组件 600 除了顶梁 620 之外，还可以包括固定构件 680 和顶梁保护板 630，如图 5 所示。固定构件 680 设置在顶梁 620 的顶部，用于固定升降桌的第一桌板 700。升降桌 700 可以包括第一桌板 700 和第二桌板 800。第一桌板 700 典型地用于放置笔记本电脑或台式电脑的显示器等等。第二桌板 800 典型地用于放置键盘等。第二桌板 800 低于第一桌板 700。示例性地，固定构件 680 可以在左右两侧对称设置。第一桌板 700 可以固定在固定构件 680 的顶部。从升降桌的上方观看，第一桌板 700 优选地可以覆盖顶梁组件 600。第一上连接部 610 和第二上连接部 660 设置

在顶梁 620 上，顶梁保护板 630 设置于顶梁 620 外侧，以封盖住第一上连接部 610 和第二上连接部 660。

示例性地，固定构件 680 可以包括水平固定板 682 和竖直固定板 684，参见图 1。竖直固定板 684 在下方连接至水平固定板 682 的内侧。需要说明的是，本文中提到的"内"和"外"均是相对于升降桌而言的，例如面向升降桌外面的一侧称为外侧，而面向升降桌里面的一侧称为内侧。辅助动力件 500 的伸缩端连接至竖直固定板 684。水平固定板 682 用于固定第一桌板 700。

优选地，每个顶梁组件 200 还可以包括悬架 640，用于固定第二桌板 800。悬架 640 可以设置在固定构件 680 的前端。悬架 640 的上端可以固定在第一桌板 700 的下表面。第二桌板 800 可以固定在悬架 640 的下端。可选地，悬架 640 的下端具有钩状结构 650，两个悬架 640 的钩状结构 650 相对设置，用于在两侧固定升降桌的第二桌板 800。

当设置两个桌板时，优选地，第一桌板 7()() 可以为"凹"形，第一桌板 700 "凹"形的缺口向前放置。固定构件 610 沿前后方向延伸到第一桌板 700 的"凹"形的突出部位。优选地，第二桌板 800 的前端突出于第一桌板。示例性地，第二桌板 800 可以为"凸"形，第二桌板 800 的小尺寸端向后放置。悬架 640 在该小尺寸端的两侧固定第二桌板 800。

优选地，每个底梁组件 3()() 除了底梁 320 之外，还可以包括底梁护板 310 和保护片 330。底梁护板 310 安装在底梁 320 的外侧，以封盖住第一下连接部 340 和第二下连接部 350。保护片 330 位于底梁延伸部 360 的外侧，以封盖下横梁 400 的端面。通常情况下，下横梁 400 的两端与底梁延伸部 360 通过螺纹紧固件锁紧。保护片 330 可以封盖下横梁 400 的端面以及螺纹紧固件，以使外观平整。

在优选的实施例中，前梁 210 和后梁 220 之间设置緩冲垫片，在收起支撑结构时，緩冲垫片能够防止前梁 210 和后梁 220 相互碰撞造成的噪音，而且能够保护设备不受损伤，同时避免夹手的风险。

为了能够使升降桌的操作更加安全可靠，优选地，支撑结构还包括锁紧开关。在图示实施例中，在每侧的顶梁組件 6()() 上均设置了镇紧开关 9()()。但是，可选地，可以仅给一侧的顶梁组件 600 设置锁紧开关 900。下面将

对锁紧开关 900 进行详细描述。

锁紧开关 900 可以包括扳手 910、传动杆 920、拨片 930、固定件 970 和传动钢索 950，参见图 5。

扳手 910 具有固定端和活动端。依靠外力，扳手 910 的活动端可以在锁紧位置和活动位置之间移动。传动轩 920 设置在顶梁组件 600 上，且沿左右方向延伸。传动杆 920 可以沿左右方向穿过顶梁組件 6()()，以由顶梁组件 600 保持其位置。扳手 910 的固定端连接于传动杆 920 的一端，传动杆 920 的另一端连接于拨片 930 的上端。传动钢索 950 沿前后方向放置，拨片 930 的下端连接于传动钢索 950 的前端，传动钢索 950 的后端连接于辅助动力件的伸缩端 510。传动钢索 950 由固定件 970 保持其位置。

优选地，传动杆 920 两端的截面为多边形结构。示例性地，传动轩 920 两端的截面形状可为三角形、菱形或者方形，传动杆 920 两端设置该形状能够在扳手和拨片之间更好的传动受力，不会导致传动失灵。

优选地，拨片 930 上端设置过孔，过孔较佳为多边形过礼，传动轩 920 两端的多边形结构与该多边形过孔相契合，拨片 930 下端开设第一键槽，将传动钢索 950 的前端连接于第一键槽。

优选地，锁紧开关 900 还包括回弹部件。回弹部件包括第一回弹部件 940 和第二回弹部件 960。第一回弹部件 940 设置在传动钢索 950 的前端，并且位于拨片 930 和固定件 970 之间，第二回弹部件 960 设置在传动钢索 950 的后端和辅助动力件 500 的伸缩端之间。第一回弹部件 940 和第二回弹部件 960 可以采用弹簧或者回弹拨片。

优选地，从升降桌的侧面看，固定件 970 具有"门"形结拘，如图 1 和图 5 所示。"门"形结构的项部用于固定在第一桌板 700 上，所述"门"形结构的前部开设有第二键槽，传动钢索 950 被置入第二键槽内。优选地，"门"形结构的后部开设有倒"L"形的定位槽，该定位槽在"门"形结构的边缘具有开口。这样，传动钢索能够通过开口进入到定位槽中，并保持在该定位槽中。

优选地，传动钢索 950 的外周面上设置有橡塑保护套。

优选地，辅助动力件的伸缩端 510 设置有钢索连接部，钢索连接部连接于传动钢索 950 的后端，第二回弹部件 960 设置在钢索连接部和传动钢

索 500 的后端之间。

优选地，扳手 910 的活动端为椭圆抛光结构。通过抛光结构，防止用户使用时造成刮伤的风险，改善用户体验。

需要说明的是，本文所涉及的与升降桌有关的方位术语，例如"高"、"低"、"前"、"后"、"左"、"右"、"上"和"下"等，均是相对于升降桌处于图 2 中所示的状态，即第二桌板 800 面向用户的状态。

基于上述锁紧开关，当转动扳手 910 同时对第一桌板 700 施如向下的力时，前梁 210 和后梁 220 与底梁组件 300 之间的角度减小，辅助动力件 500 压缩，升降桌整体高度下降，以满足坐姿需要；且当升降桌处于收纳状态，传动钢索 950 使辅助动力件 500 处于锁紧状态。需要升高桌板时，可转动扳手 910，带动传动钢索 950 解除辅助动力件 500 的自锁功能，在辅助动力件 500 的作用下，前梁 210 和后梁 220 与底梁組件 300 之间的角度增大，升降桌整体高度上升，以满足站姿需要。

使用该锁紧开关能够在使用过程中保持升降桌的固定状态，用户收起升降桌时，通过锁紧开关的联动作用将升降桌收纳完成，省力省事，动作一气呵成，同时收起时不会产生噪音；此外升降桌基于锁紧开关和辅助动力件的作用，还能够自动上升，无需人为干预，展开时方便快捷，给用户使用带来了方便。

根据本发明的另一方面，还提供一种升降桌，该升降桌可以具有第一桌板；或者具有第一桌板和第二桌板。此外，该升降桌还具有如前所述的人一种支撑结构。

本实用新型已经通过上述实施倒进行了说明，但应当理解的是，上述实施例只是用于举例和说明的目的，而非意在将本实用新型限制于所描述的实施例范围内。此外本领域技术人员可以理解的是，本实用新型并不局限于上述实施倒，根据本实用新型的教导还可以做出更多种的变型和修改，这些变型和修改均落在本实用新型所要求保护的范围以内。本实用新型的保护范围由附属的权利要求书及其等效范围所界定。

权 利 要 求 书

1、一种用于升降桌的支撑结构，其特征在于，包括左右相对设置的支撑组件、左右相对设置的顶梁组件、左右相对设置的底梁组件和左右相对设置的辅助动力件；

每个所述顶梁组件包括顶梁以及设置在所述顶梁上的第一上连接部和第二上连接部；

每个所述底梁组件包括底梁和设置在所述底梁上的第一下连接部和第二下连接部；

每个所述支撑组件包括前梁和后梁；

每个所述辅助动力件具有固定端和伸缩端；

其中，所述前梁的上端铰接于所述第一上连接部、下端铰接于所述第一下连接部，所述后梁的上端铰接于所述第二上连接部、下端铰接于所述第二下连接部，所述前梁、所述底梁、所述后梁和所述顶梁形成平行四边形；所述辅助动力件的固定端铰接于所述后梁上且靠近所述第二下连接部，所述辅助动力件的伸缩端连接于所述顶梁组件上，且从升降桌的侧面看，所述伸缩端在所述第一上连接部和所述第二上连接部之间连接于所述顶梁组件。

2、如权利要求 1 所述的支撑结构，其特征在于，还包括有上横梁，所述上横梁的两端在所述第一上连接部和第二上连接部之间连接至所述顶梁。

3、如权利要求 1 所述的支撑结构，其特征在于，还包括有下横梁，每个所述底梁组件还包括底梁延伸部，所述底梁延伸部连接至所述底梁的后端，所述下横梁的两端连接至所述底梁延伸部。

4、如权利要求 1-3 中任一项所述的支撑结构，其特征在于，每个所述顶梁组件还包括固定构件和顶梁保护板，

所述固定构件设置于所述顶梁的顶部，用于固定升降桌的第一桌板；

所述顶梁保护板设置于所述顶梁的外铜，以封盖住所述第一上连接部和所述第二上连接部。

5、如权利要求 4 所述的支撑结构，其特征在于，所述固定构件包括

水平固定板和竖直固定板，所述竖直固定板在下方连接至所述水平固定板的内侧，所述辅助动力件的伸縮端连接至所述竖直固定板，所述水平固定板用于固定所述第一桌板。

6、如权利要求 4 所述的支撑结构，其特征在于，每个所述顶梁组件还包括悬架，

所述悬架设置在所述固定构件的前端，所述悬架用于固定所述升降桌的第二桌板，其中，所述第二桌板低于所述第一桌板，且所述第二桌板的前端突出于所述第一桌板。

7、如权利要求 4 所述的支撑结构，其特征在于，所述第一桌板为"凹"形，第一桌板"凹"形的缺口向前放置，所述固定构件沿前后方向延伸到所述第一桌板"凹"形的突出部位。

8、如权利要求 6 所述的支撑结构，其特征在于，所述悬架的下端具有钩状结构，所述悬架的钩状结构相对设置，用于在两侧固定所述升降桌的第二桌板。

9、如权利要求 3 所述的支撑结构，其特征在于，每个所述底梁组件还包括底梁护板和保护片，

所述底梁护板安装在所述底梁的外侧，以封盖住所述第一下连接部和所述第二下连接部，

所述保护片位于所述底梁延伸部的外侧，以封盖所述下横梁的端面。

10、如权利要求 3 所述的支撑结构，其特征在于，每个所述项梁组件还包括顶梁延伸部，所述顶梁延伸部连接至所述顶梁的前端，使得从升降桌的侧面看所述支撑结构呈"Z"形。

11、如权利要求 1 所述的支撑结构，其特征在于，所述辅助动力件的所述伸缩端与所述顶梁组件的连接点在所述平行四边形的上边的中点上。

12、如权利要求 1 所述的支撑结构，其特征在于，还包括锁紧开关，所述锁紧开关包括扳手、传动杆、拨片、固定件和传动钢索；

所述扳手具有固定端和活动端；

其中，所述传动軒设置在所述顶梁组件上，且沿左右方向延伸，所述扳手的固定端连接于所述传动軒的一端，所述传动杆的另一端连接于所述

拨片的上端，

其中，所述传动钢索沿前后方向放置，所述拨片的下端连接于所述传动钢索的前端，所述传动钢索的后端连接于所述辅助动力件的伸缩端，所述传动钢索由所述固定件固定。

13、如权利要求 12 所述的支撑结构，其特征在于，所述传动杆两端的截面为多边形结构。

14、如权利要求 13 所述的支撑结构，其特征在于，所述拨片上端设置过孔，所述过孔为多边形过孔，所述传动杆两端的多边形结构与所述多边形过孔相契合，所述拨片的下端开设第一键槽，所述传动钢索的前端连接于所述第一键槽。

15、如权利要求 12-14 中任一项所述的支撑结构，其特征在于，所述锁紧开关还包括回弹部件；

所述回弹部件包括第一回弹部件和第二回弹部件；

所述第一回弹部件设置在所述传动钢索的前端，并且位于所述拨片和所述固定件之间，所述第二回弹部件设置在所述传动钢索的后端和所述辅助动力件的伸缩端之间。

16、如权利要求 15 所述的支撑结构，其特征在于，从所述升降桌的侧面看，所述固定件具有"门"形结构，所述"门"形结构的顶部用于固定在升降桌的第一桌板上，所述"门"形结构的前部开设有第二键槽，所述传动钢索置入所述所述第二键槽内。

17、如权利要求 16 所述的支撑结构，其特征在于，所述"门"形结构的后部开设有倒“L”形的定位槽，所述定位槽在所述“门”形结构的边缘具有开口，以使所述传动钢索能够通过所述开口进入并保持在所述定位槽中。

18、如权利要求 17 所述的支撑结构，其特征在于，所述传动钢索的外周面上设置有橡塑保护套。

19、如权利要求 18 所述的支撑结构，其特征在于，所述辅助动力件的伸缩端设置有钢索连接部，所述钢索连接部连接于所述传动钢索的后端，所述第二回弹部件设置在所述钢索连接部和所述传动钢索的后端之间。

20、一种升降桌，其特征在于，包括如权利要求 1-19 中任意一项所述的支撑结构。

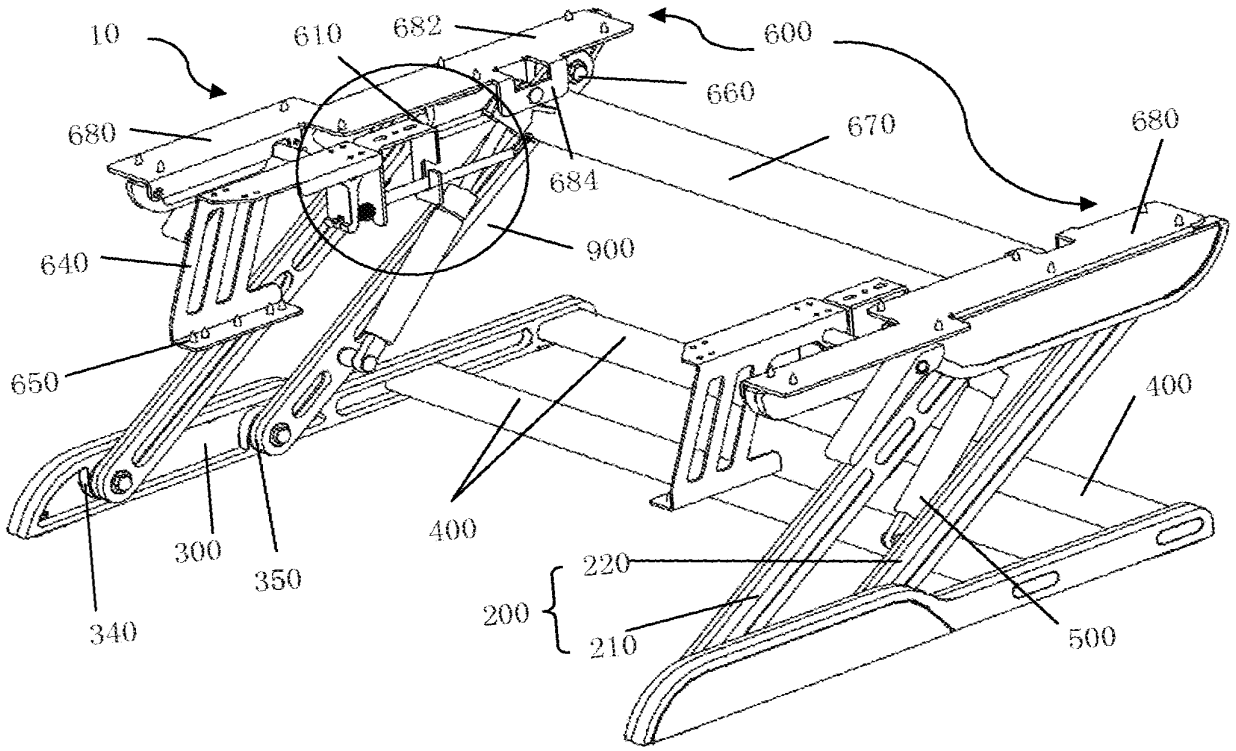

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图 1

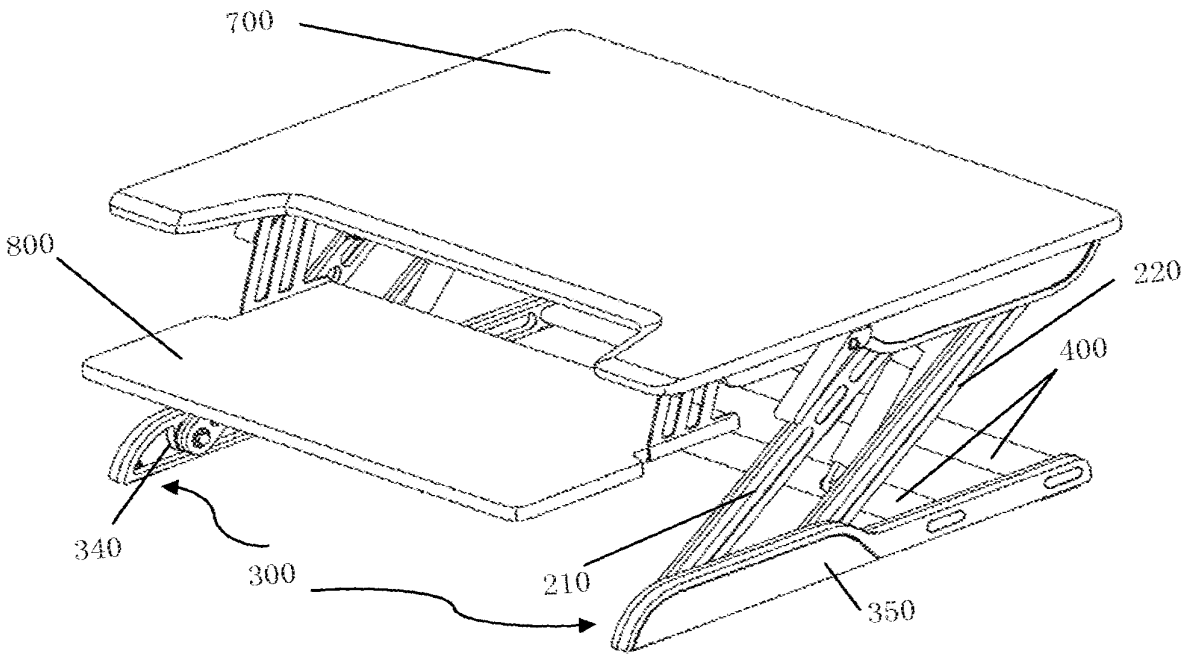

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图 2

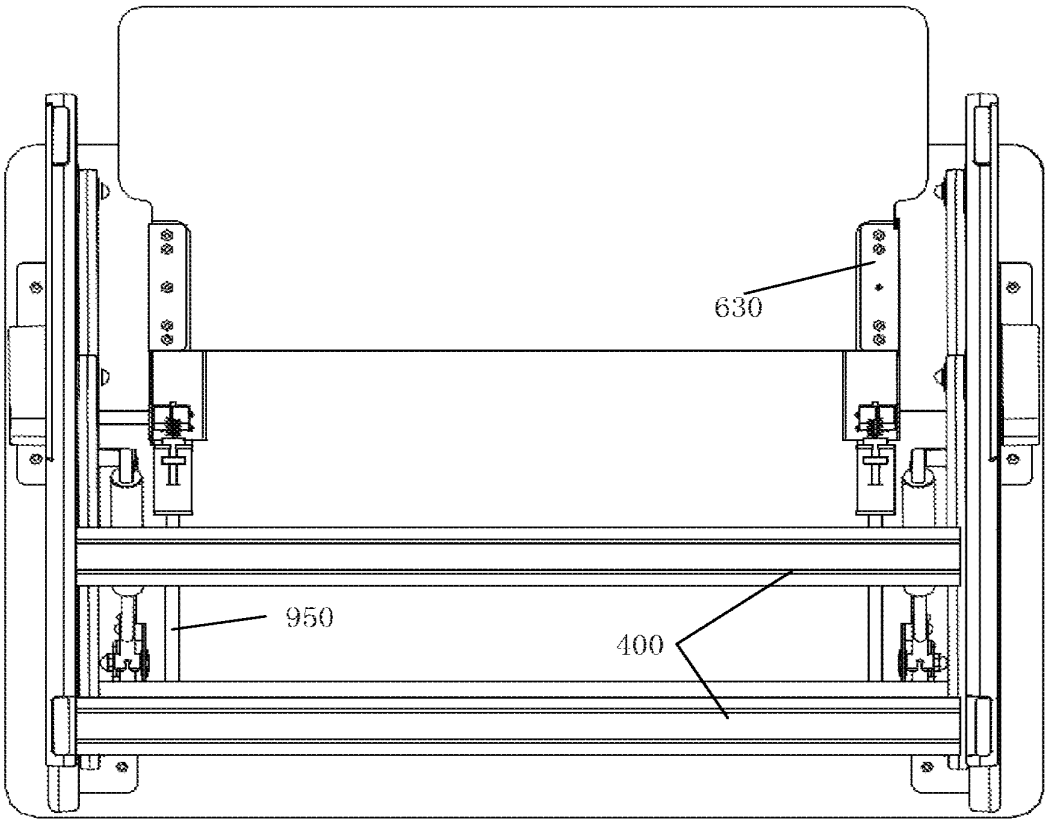


图 3

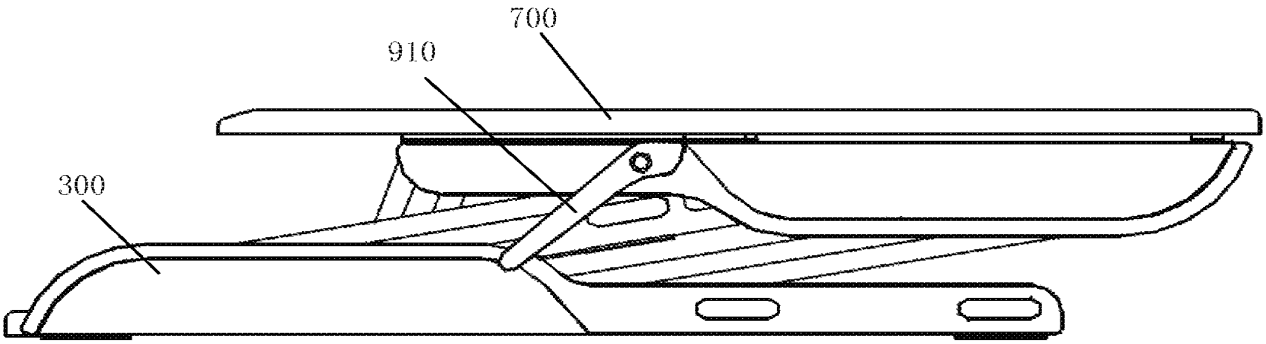


图 4

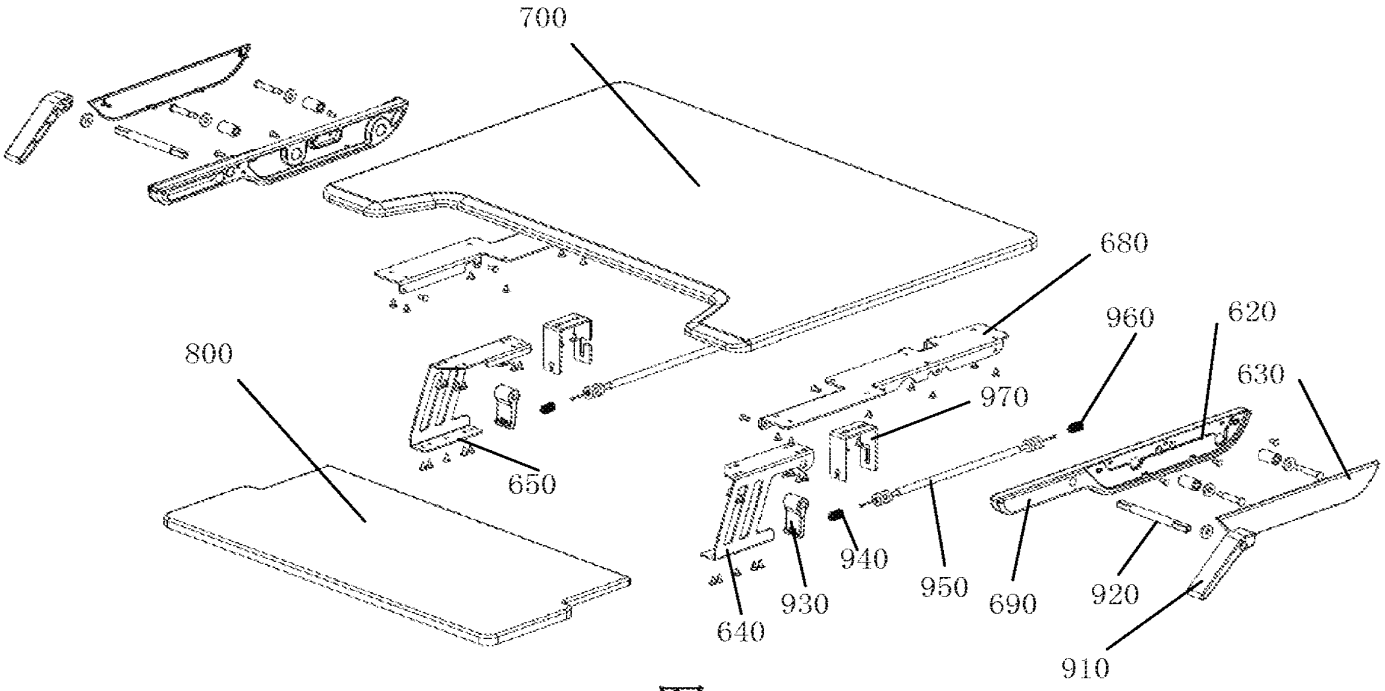

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图 5

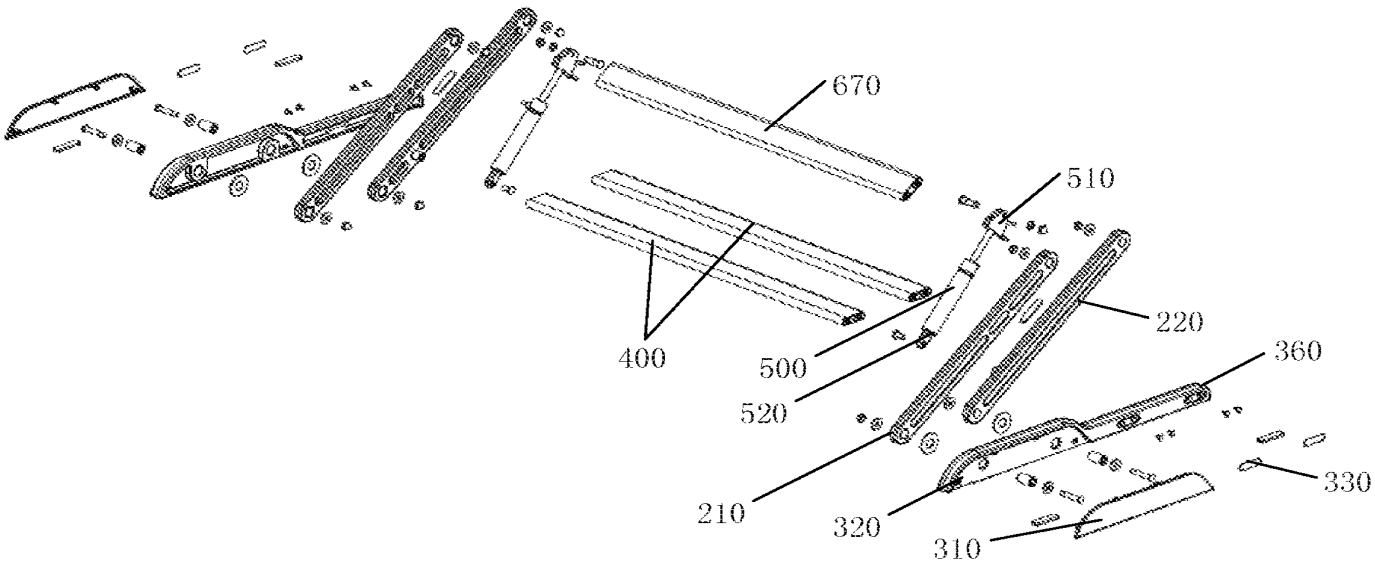

670
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图 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/093293

A. CLASSIFICATION OF SUBJECT MATTER

A47B 13/08(2006.01)i; A47B 9/16(2006.01)i; A47B 13/02(2006.01)i

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)

A47B

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

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

CNABS; CNTXT; VEN; WOTXT; EPTXT; USTXT; CNKI: 升降,伸缩,收缩,调节,调整,可调,改变,高度,角度,平行,锁,气缸,气压,油缸,气弹簧,钢索,绳,线 lift+ ,flexible, stretc+, rais+, adjust+, regulat+, var+, height, lock+, gas spring, air spring, rope

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 107307587 A (CHEN, GONG) 03 November 2017 (2017-11-03) description, paragraphs [0060]-[0077], and figures 1-6	1-11, 20
X	CN 206166181 U (CHANGZHOU BXINYUSE LIFT TABLE MANUFACTURE CO., LTD.) 17 May 2017 (2017-05-17) description, paragraphs [0004]-[0024], and figures 1-4	1-11, 20
Y	CN 206166181 U (CHANGZHOU BXINYUSE LIFT TABLE MANUFACTURE CO., LTD.) 17 May 2017 (2017-05-17) description, paragraphs [0004]-[0024], and figures 1-4	12-20
Y	CN 206006417 U (KUNSHAN ZILLA TECHNOLOGY CO., LTD.) 15 March 2017 (2017-03-15) description, paragraphs [0005]-[0038], and figures 1-3	12-20
X	CN 205988096 U (CHEN, YADI) 01 March 2017 (2017-03-01) description, paragraphs [0004]-[0019], and figures 1-3	1-11, 20
X	CN 205493003 U (SHEN, WEIJIAN) 24 August 2016 (2016-08-24) description, paragraphs [0003]-[0020], and figures 1-2	1-11, 20

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"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)

"O" document referring to an oral disclosure, use, exhibition or other means

"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 August 2018	05 September 2018

Name and mailing address of the ISA/CN	Authorized officer
State Ditellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088 China	
Facsimile No. (86-10)62019451	Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Liformation on patent family members

International application No.
PCT/CN2018/093293

Patent document cited in search report			Publication date (day/mo nth/year)	Patent family member(s)	Publication date (day/month/year)
CN	107307587	A	03 November 2017	None	
CN	206166181	U	17 May 2017	None	
CN	206006417	U	15 March 2017	None	
CN	205988096	U	01 March 2017	None	
CN	205493003	U	24 August 2016	None	

Form PCT/ISA/210 (patent family annex) (January 2015)

国际检索报告

国际申请号

PCT/CN2018/093293

A. 主题的分类

A47B 13/08 (2006.01)i; A47B 9/16 (2006.01)i; A47B 13/02 (2006.01)i

按照国际专利分类（IPC）或者同时按照国家分类和IPC两种分类

B. 检索领域

检索的最低限度文献（标明分类系统和分类号）

A47B

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库（数据库的名称，和使用的检索词（如使用））

CNABS CNTXT VEN WOTXT EPTXT USTXT CNKI：升降，伸缩，收缩，调节，调整，可调，改变，高度，角度，平行，锁，气缸，气压，油缸，气弹簧，钢索，绳，线，lift+, flexible, stretc+, rais+, adjust+, regulat+, var+, height, lock+, gas spring, air spring, rope

C. 相关文件

类型*	引用文件，必要时，指明相关段落	相关的权利要求
PX	CN 107307587 A（陈工）2017年11月3日（2017-11-03） 说明书第[0060]-[0077]段，附图1-6	1-11，20
X	CN 206166181 U（常州变形元素升降桌制造有限公司）2017年5月17日（2017-05-17） 说明书第[0004]-[0024]段，附图1-4	1-11，20
Y	CN 206166181 U（常州变形元素升降桌制造有限公司）2017年5月17日（2017-05-17） 说明书第[0004]-[0024]段，附图1-4	12-20
Y	CN 206006417 U（昆山奇朗数码科技有限公司）2017年3月15日（2017-03-15） 说明书第[0005]-[0038]段，附图1-3	12-20
X	CN 205988096 U（陈亚迪）2017年3月1日（2017-03-01） 说明书第[0004]-[0019]段，附图1-3	1-11，20
X	CN 205493003 U（申为建）2016年8月24日（2016-08-24） 说明书第[0003]-[0020]段，附图1-2	1-11，20

□ 其余文件在C栏的续页中列出。

☑ 见同族专利附件。

* 引用文件的具体类型：

"A" 认为不特别相关的表示了现有技术一般状态的文件

"E" 在国际申请日的当天或之后公布的在先申请或专利

"L" 可能对优先权要求构成怀疑的文件，或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件（如具体说明的）

"O" 涉及口头公开、使用、展览或其他方式公开的文件

"P" 公布日先于国际申请日但迟于所要求的优先权日的文件

"T" 在申请日或优先权日之后公布，与申请不相抵触，但为了理解发明之理论或原理的在后文件

"X" 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

"Y" 特别相关的文件，当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时，要求保护的发明不具有创造性

"&" 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
2018年8月15日	2018年9月5日

ISA/CN的名称和邮寄地址	受权官员
中华人民共和国国家知识产权局（ISA/CN） 中国北京市海淀区蓟门桥西土城路6号 100088	李慧
传真号 (86-10) 62019451	电话号码 86-(0512)-88997223

表 PCT/ISA/210 （第2页）（2015年1月）

国际检索报告
关于同族专利的信息

国际申请号
PCT/CN2018/093293

检索报告引用的专利文件			公布日 (年/月/日)	同族专利	公布日 (年/月/日)
CN	107307587	A	2017年11月3日	无	
CN	206166181	U	2017年5月17日	无	
CN	206006417	U	2017年3月15日	无	
CN	205988096	U	2017年3月1日	无	
CN	205493003	U	2016年8月24日	无	

表 PCT/ISA/210 (同族专利附件) (2015年1月)

Data originating from sources other than the EPO may not be accurate, complete, or up to date.

The wording below is an initial machine translation of the original publication. To generate a version using the latest translation technology, go to the original language text and use Patent Translate.

1. The upper frame 1 is provided flatly, the lower frame 2 is provided horizontally in the front and rear direction below the upper frame 1, and the two rods are pivotally joined at the center attachment point 3 at the center to form an X-shaped X-shaped The rear ends of the lower part of one X 4 and the other X 5 are respectively connected to the rear left pivot point 6 and the rear right pivot point 6 so that it can slide back and forth to the left and right of the rear part of the lower frame 2 And the front end is pivotally attached to the left and right of the front part of the lower frame 2 by the front cloth pivot point 8 and the front cloth pivot point 9 and the X rod 4 and the other X rod 5 And the rear end of the upper part of the upper frame 1 are pivotally connected by the rear left pivot point 10 and the rear right pivot point 11 so as to be able to slide back and forth to the left and right of the rear part of the upper frame 1 and the front ends are respectively pivoted in front of the upper frame 1 The front cloth pivot point 12 and the front cloth pivot point 13 pivotally mounted on the left and right sides of the X rod 4 and the front end and the rear end of one X rod 4 and the front end and the rear end of the other X rod 5 To reduce the interval between And a spacing adjuster 15 capable of adjusting the distance between the front end and the rear end of one X rod 4 and the distance between the front end and the rear end of the other X rod 5 Height adjustable seat frame.

(19) 日本国特許庁 (JP)　　(11)実用新案出願公開

(12) 公開実用新案公報 (U)　　昭58—61051

(51)Int. Cl.³	識別記号	庁内整理番号
A 47 C 3/36		7309--3B
A 47 B 9/16		6501--3B

(43)公開　昭和58年(1983)4月25日

審査請求　有

(全　頁)

(54)高さ調節座枠

(71)出　願　人　美濃市上河和1061
天龍工業株式会社
各務原市蘇原興亜町4丁目1番地

(21)実　願　昭56—157747

(22)出　願　昭56(1981)10月22日

(72)考　案　者　遠藤達哉

明　細　書

1　考案の名称

高さ調節座枠

2　実用新案登録請求の範囲

前後方向に水平に上枠1を設け、上枠1の下方に前後方向に水平に下枠2を設け、二本の桿が中央で中枢着点3で枢着されてX形に形成されたX桿の二個を備え、一方のX桿4と他方のX桿5との下部の後端を夫々下枠2の後部の左右に前後スライドが可能なように後左枢着点6と後右枢着点7とによつて枢着すると共に前端を夫々下枠2の前部の左右に前左枢着点8と前右枢着点9とによつて枢着し、一方のX桿4と他方のX桿5との上部の後端を夫々上枠1の後部の左右に前後スライドが可能なように後左枢着点10と後右枢着点11とによつて枢着すると共に前端を夫々上枠1の前部の左右に前左枢着点12と前右枢着点13とによつて枢着し、一方のX桿4の前端と後端との間

隔ならびに他方のX桿5の前端と後端との間隔を共に小にするように付勢する付勢バネ14を備え、一方のX桿4の前端と後端との間隔ならびに他方のX桿5の前端と後端との間隔を共に調節することのできる間隔調節具15を備えて成る高さ調節座枠

3　考案の詳細な説明

本考案の目的は、座当の高さを広い範囲で容易に調節することのできる簡単なる機構を得んとするにある。

本考案の要旨は、前後方向に水平に上枠を設け上枠の下方に前後方向に水平に下枠を設け二本の桿が中央で中枢着点で枢着されてX形に形成されたX桿の二個を備え一方のX桿と他方のX桿との下部の後端を夫々下枠の後部の左右に前後スライドが可能なように後左枢着点と後右枢着点とによつて枢着すると共に前端を夫々下枠の前部の左右に前左枢着点と前右枢着点とによつて枢着し一方のX桿と他方のX桿との上部の後端を夫々上枠の後

部の左右に前後スライドが可能なように後左枢着点と後右枢着点とによつて枢着すると共に前端を夫々上枠の前部の左右に前左枢着点と前右枢着点とによつて枢着し一方のX桿の前端と後端との間隔ならびに他方のX桿の前端と後端との間隔を共に小にするように付勢する付勢バネを備え一方のX桿の前端と後端との間隔ならびに他方のX桿の前端と後端との間隔を共に調節することのできる間隔調節具を備えて成る。

以下本考案の実施例の図面により、本考案の構成を説明する。

図面上の記号とその部分の名称との対応をまず説明すると、1は上枠、2は下枠、3は中枢着点、4は一方のX桿、5は他方のX桿、6、10は後左枢着点、7、11は後右枢着点、8、12は前左枢着点、9、13は前右枢着点、14は付勢バネ、15は間隔調節具である。

前後方向に水平に上枠1を設ける。

上枠1の下方に前後方向に水平に下枠2を設ける。

二本の桿が中央で中枢着点3で枢着されてX形に形成されたX桿の二個を備える。

一方のX桿4と他方のX桿5との下部の後端を夫々下枠2の後部の左右に、前後スライドが可能なように、たとえば前後方向に穿たれた左案内溝16と右案内溝17とに案内される後左枢着点6と後右枢着点7とによつて枢着する。またこの下部の前端を夫々下枠2の前部の左右に、前左枢着点8と前右枢着点9とによつて枢着する。

一方のX桿4と他方のX桿5との上部の後端を夫々上枠1の後部の左右に、前後スライドが可能なように、たとえば前後方向に穿たれた左案内溝18と右案内溝19とに案内される後左枢着点10と後右枢着点11とによつて枢着する。またこの上部の前端を夫々上枠1の前部の左右に、前左枢着点12と前右枢着点13とによつて枢着する。

一方のX桿4の前端と後端との間隔ならびに他方のX桿5の前端と後端との間隔を共に小にするように付勢する付勢バネ14を備える。付勢バネ14の構造は適宜であるが、図では後左枢着点10と後右枢着点11とを結合して後軸20とし、前左枢着点12と前右枢着点13とを結合して前軸21とし、後軸20と前軸21との間に引張バネを張つて、付勢バネ14としている。

一方のX桿4の前端と後端との間隔ならびに他方のX桿5の前端と後端との間隔を共に調節することのできる間隔調節具15を備える。

間隔調節具15の構造は適宜である。図では次のような場合が示されている。

後軸20に固定された後片22に後端が連結され、前端が上枠1の前部に連結されたフリーロック具をもつて、間隔調節具15としている。

フリーロック具のような間隔調節具15は機械的のものでも、流体的のものであつても、電気的のものであつても、その他のものであつても差支え

ない。

ハンドル２３は操作路２４を介し、間隔調節具１５をロック状態にもフリー状態にもできる。間隔調節具１５は常にはロック状態にある。

本考案はこのような構成を有するので、その作用、効果は、次のようである。

本考案は下枠２を床面等に設置し、上枠１の上に座当を設けて使用するものである。

間隔調節具１５がロック状態では、X桿４、５の前端と後端との間隔は不変であるので、X桿４、５を形成する桿のなす角度は一定であり、すなわち各桿の水平に対する角度は一定であつて、X桿４、５の形は不変である。すなわち間隔調節具１５がロック状態では上枠１の高さは一定であり、その上方からの荷重にたえる。

間隔調節具１５をフリー状態にするとX桿４、５の前端と後端との間隔は可変になるので、付勢バネ１４の付勢により前端と後端との間隔は小となり、上枠１は上方に押し上げられて高さが高くな

る。しかし上枠１を上から押さえつけると前端と後端との間隔は大になり、付勢バネ１４の付勢に抗して上枠１はさがり、高さが低くなる。すなわち高さが調節されるものである。

適当な高さのところで間隔調節装置１５をロック状態にすると、その高さで上枠１は固定される。

前端と後端との間隔の変化は、後端が左案内溝１６、１８と右案内溝１７、１９とに案内されて滑るので支障なく行なわれる。

フリーロック具等を用いる間隔調節具１５は公知のものを利用することができるので、説明を省略する。間隔調節具１５としては圧縮空気等により積極的な作動をするエアシリンダ等を用いることもできる。

本考案はＸ桿を利用するので構造が簡単であるにもかかわらず、高さ調節の範囲を広くすることができる。

このようにして本考案によれば、座当の高さを広い範囲で容易に調節することのできる簡単なる機

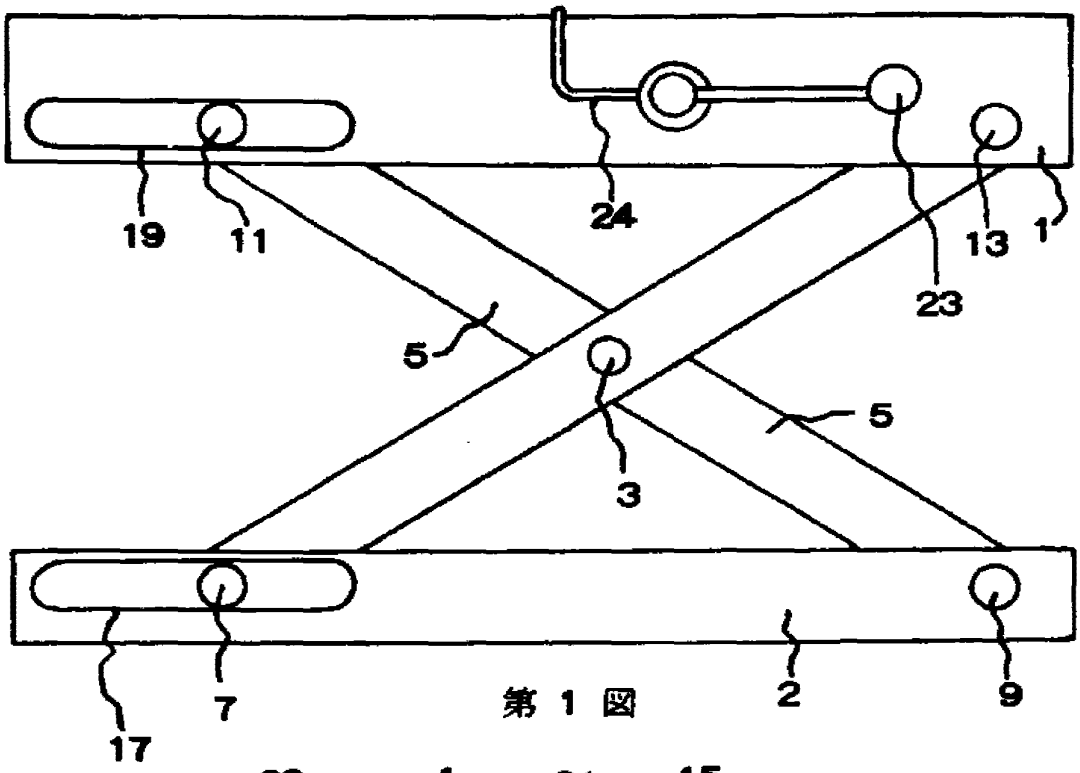
構が得られるものであり、実用上価値大である。なお本説明においては前後左右なる表現を用いているが、これらが逆になつても本考案は成立するものである。

4　図面の簡単な説明

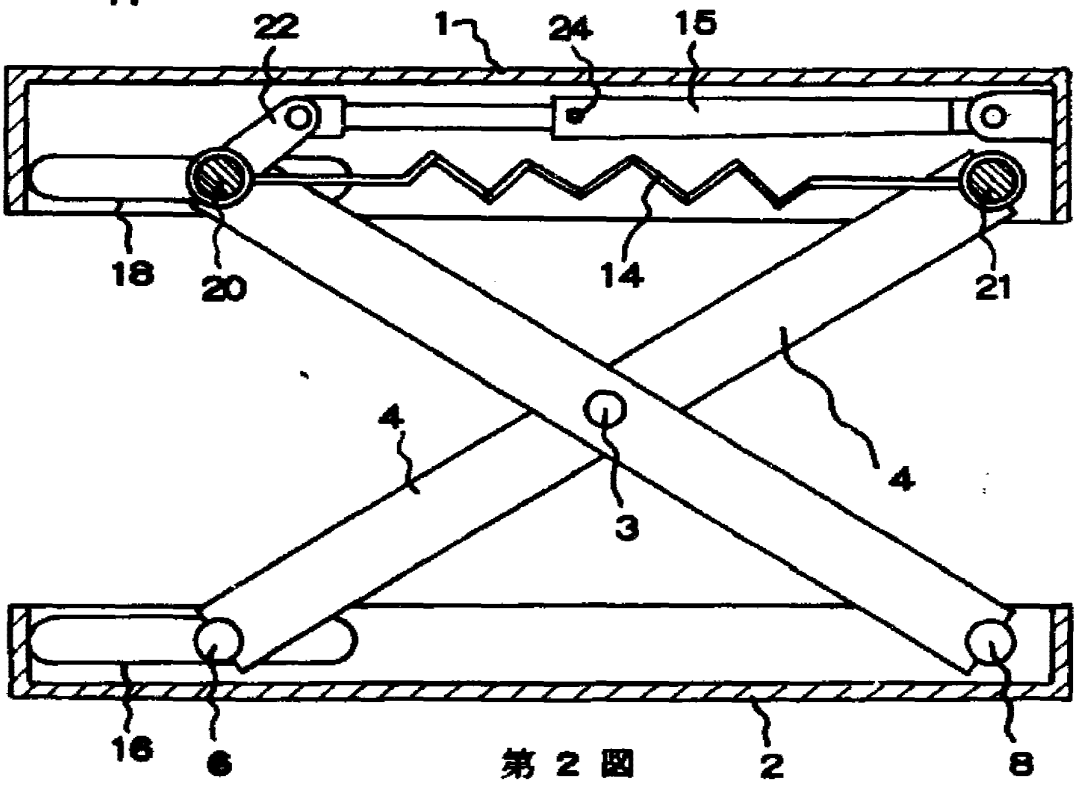
第1図は側面図、第2図は切欠側面図、第3図は上面図、第4図は前面図である。

図において、1は上枠、2は下枠、3は中枢着点、4は一方のX桿、5は他方のX桿、6、10は後左枢着点、7、11は後右枢着点、8、12は前左枢着点、9、13は前右枢着点、14は付勢バネ、15は間隔調節具である。

実用新案登録出願人　天龍工業株式会社

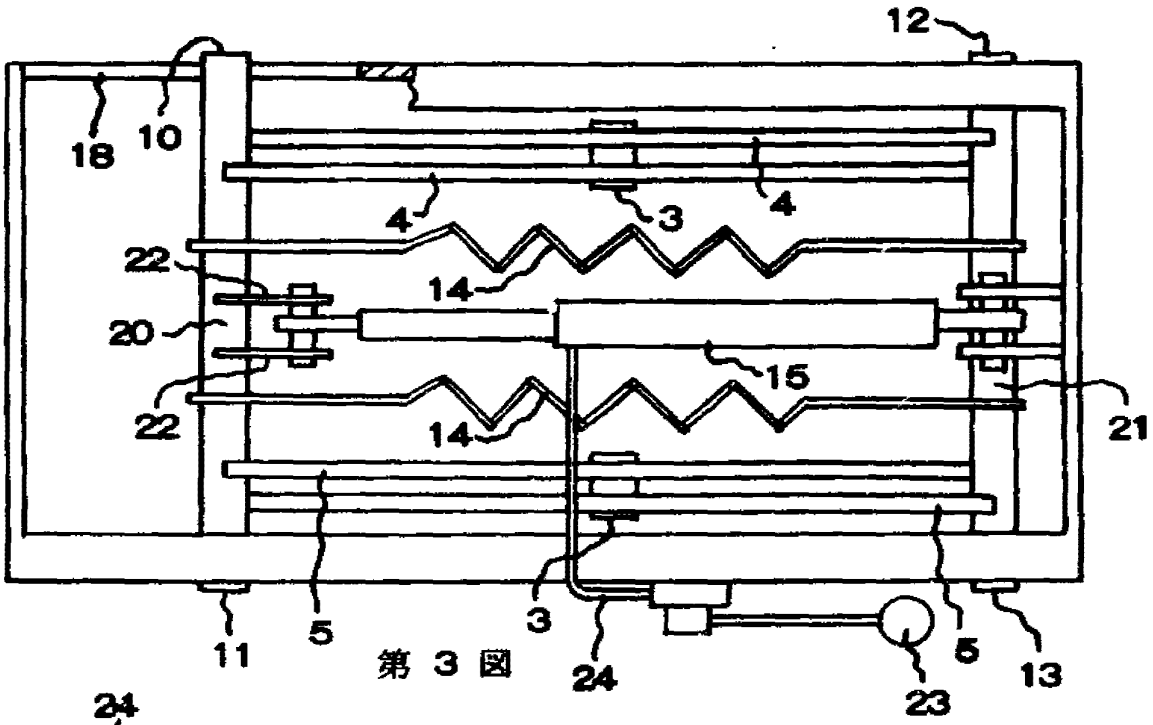


第 1 図

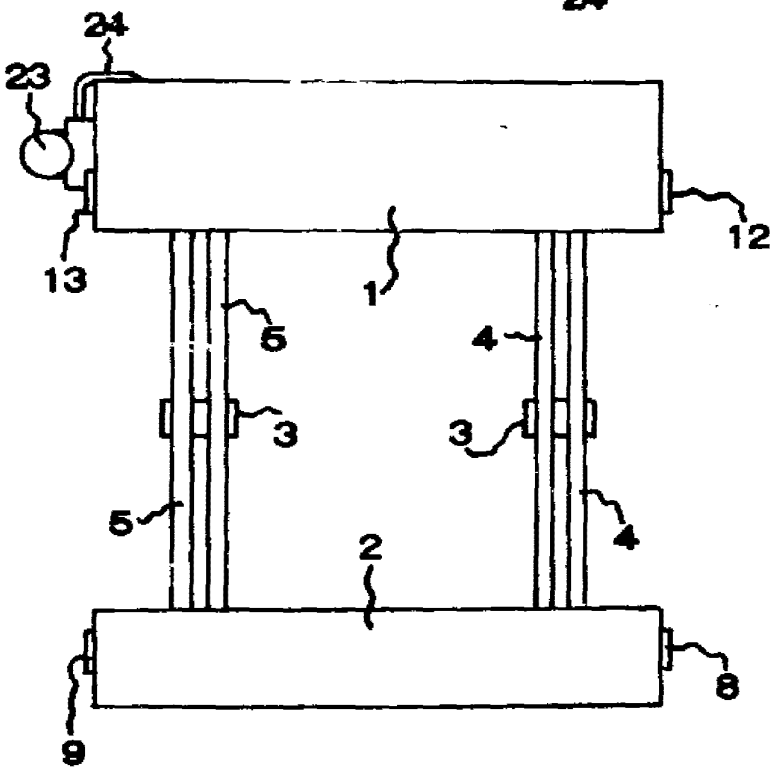


第 2 図

実用新案登録出願人 天龍工業株式会社



第 3 図



第 4 図

実用新案登録出願人　天龍工業株式会社

Patents

Lifting desktop device and display integrated desk with same

Abstract

The invention discloses a lifting desktop device, which comprises a lifting desktop, a screw transmission mechanism, a first support, two push bars and two first support bars. The screw transmission mechanism comprises two synchronous pulleys, a synchronous belt, a motor device, two screw sliders and two screws. The two screw sliders are sleeved on the two screws respectively. The two synchronous pulleys are fixed on the two screws respectively at the same end, and the synchronous belt is connected with the two synchronous pulleys. One of the support bars is connected with the motor device. On end of a push bar is pivoted to the lifting desktop, and the other end of the push bar pivoted to the screw sliders. One end of the other support rod is pivoted to the lifting desktop, and the other end of the other support rod is pivoted to the first support. The lifting desktop is driven by the motor device to ascend or descend to fold in. The invention further discloses a display integrated desk with the lifting desktop device. The lifting desktop device is applicable to various computer desks, school desks, tea tables and the like and can be used for holding keyboards and mice. The lifting desktop is freely liftable and foldable, small and flexible, and highly universal and practical.

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China

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Other languages: Chinese

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Current Assignee : GUANGZHOU WULIANJIA INFORMATION TECHNOLOGY Co Ltd

Worldwide applications

2012 CN

Application CN201210092111.0A events

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2014-07-16	Publication of CN102599728B
Status	Expired - Fee Related
2032-03-30	Anticipated expiration

Info: Patent citations (4), Cited by (10), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Claims (7)

Hide Dependent

1. a up-down desktop assembly is applicable to be arranged on the support platform, it is characterized in that; Comprise up-down desktop, lead screw transmission mechanism, first bearing, two catch bars and two first support bars; Said lead screw transmission mechanism comprises motor device, two nut sliders of synchronizing wheel, synchronous band, output drive strength and the screw mandrel that be set in parallel on the support platform by two of motor device driving, and two said nut sliders are placed in respectively on two screw mandrels, and two synchronizing wheels are fixedly arranged on the same end of two said screw mandrels respectively; Said synchronous band connects two said synchronizing wheels; One of them of two screw mandrels is connected through gear with the output shaft of motor device, and two said catch bar one ends are installed on the up-down desktop with articulating respectively, and the two said catch bar other ends are installed on the nut slider with articulating respectively; Said first bearing is fixed on the said support platform; Two first support bars, one end is installed on the up-down desktop with articulating respectively, and the two said first support bar other ends are installed on said first bearing with articulating respectively, and said motor device drives and drives the synchronizing wheel rotation; Synchronizing wheel on another screw mandrel is driven by synchronous band and realizes rotating synchronously; Two screw mandrels rotate under the drive of synchronizing wheel, and two nut sliders move along the screw mandrel direction, move along the screw mandrel direction thereby drive catch bar; Slowly upwards lifting or fold downwards of the other end under two said catch bars and the two said promotions that are supported on nut slider, thus it is vertical with said support platform or fold downwards until two said support bars towards last lifting to drive same table.

2. lead screw transmission mechanism as claimed in claim 1; It is characterized in that; Said up-down desktop assembly also comprises second bearing and two second support bars, and said second bearing is fixed on the said support platform, and said second support bar, one end is installed on the up-down desktop with articulating respectively; The two said second support bar other ends are installed on second bearing with articulating respectively, two said second support bars parallel respectively with two said first support bars and consistent with the length of two said first support bars.

3. lead screw transmission mechanism as claimed in claim 2 is characterized in that, said first bearing is fixed between the two said screw mandrels, and said second bearing is fixed on the outside of two said screw mandrels.

4. lead screw transmission mechanism as claimed in claim 2 is characterized in that, said second bearing is fixed between the two said screw mandrels, and said first bearing is fixed on the two said screw mandrel outsides.

5. like claim 3 or 4 described lead screw transmission mechanism; It is characterized in that; Convex with block respectively on said first bearing and said second bearing, said block stops first support bar, second support bar respectively, and said first support bar is vertical with said support platform with said second support bar.

6. lead screw transmission mechanism as claimed in claim 1 is characterized in that, two said screw mandrels are separately installed with fixed block in two ends separately, and two said screw mandrels are installed on the support platform through said fixed block respectively.

7. display integral table; It is characterized in that, Comprise a body, display and up-down desktop assembly as claimed in claim 1; Said display keeps flat and is arranged on the said table body and said display and the pivot joint of said table body, and said up-down desktop assembly is installed in the said table body and amounts to the below that lies against said display, and said first bearing is fixedly mounted on the table body of said display table; Said display lifting stands on the upper surface of said table body, and upwards lifting is vertical with the upper surface of said table body until two said first support bars under the drive of said lead screw transmission mechanism for the up-down desktop of said up-down desktop assembly.

Description

Up-down desktop assembly and have the display integral table of this device

Technical field

The present invention relates to digital furniture technical field, be specifically related to a kind of desktop assembly and have the display integral table of this device of going up and down.

Background technology

More and more universal along with digital home, earth-shaking variation is taking place in people's life staying idle at home, and wherein, the digital automation design incorporates the modern digital household more and more becomes the most outstanding advantage.In home environment, desk has had multiple function and has been dissolved in people's life common dining table, computer desk, learning desk or the like of being applicable in the existing stage; But present table function is more single; Can not satisfy the demand of many usefulnessization, how combine digital and electronic science and technology, automatic technology to improve the function of desk better, save home room; Make the user enjoy the enjoyment of digital home better, building digital household environment is the hot issue that people study always.

Existing lifting actuator generally all is to be applied to industry Control or the precision equipment aspect is many; Fewer being applied in the work-at-home equipment; The lifting actuator of transmission all is thick; Can not do to such an extent that thinnerly satisfy in digital home equipment for a short time, satisfy the growing demand of people.

Summary of the invention

Can't be dissolved in the existing fitment for solving existing lowering or hoisting gear, the embodiment of the invention provides a kind of desktop assembly and have the display integral table of this device of going up and down, and the lowering or hoisting gear of screw mandrel transmission is applied in the digital fitment.

Accordingly; The embodiment of the invention provides a kind of up-down desktop assembly; Be applicable to be arranged on the support platform that said up-down desktop assembly comprises up-down desktop, lead screw transmission mechanism, first bearing, two catch bars and two first support bars, said lead screw transmission mechanism comprises motor device, two nut sliders of synchronizing wheel, synchronous band, output drive strength and the screw mandrel that be set in parallel on the support platform by two of motor device driving; Two said nut sliders are placed in respectively on two screw mandrels; Two synchronizing wheels are fixedly arranged on the same end of two said screw mandrels respectively, and said synchronous band connects two said synchronizing wheels, and one of them of two screw mandrels is connected through gear with the output shaft of motor device; Two said catch bar one ends are installed on the up-down desktop with articulating respectively; The two said catch bar other ends are installed on the nut slider with articulating respectively, and two first support bars, one end is installed on the up-down desktop with articulating respectively, and said first bearing is fixed on the said support platform; The two said first support bar other ends are installed on said first bearing with articulating respectively; Said motor device drives and drives the synchronizing wheel rotation, and the synchronizing wheel on another screw mandrel is driven by synchronous band and realizes rotating synchronously, and two screw mandrels rotate under the drive of synchronizing wheel; Two nut sliders move along the screw mandrel direction; Move along the screw mandrel direction thereby drive catch bar, slowly upwards lifting or fold downwards of the other end under two said catch bars and the two said promotions that are supported on nut slider, thus the drive same table is vertical with said support platform or fold downwards until two said support bars towards last lifting.

Preferably; Said up-down desktop assembly also comprises second bearing and two second support bars; Said second bearing is fixed on the said support platform; Said second support bar, one end is installed on the up-down desktop with articulating respectively, and the two said second support bar other ends are installed on second bearing with articulating respectively, two said second support bars parallel respectively with two said first support bars and consistent with the length of two said first support bars.

As one embodiment of the invention, said first bearing is fixed between the two said screw mandrels, and said second bearing is fixed on the outside of two said screw mandrels.

As another embodiment of the present invention, said second bearing is fixed between the two said screw mandrels, and said first bearing is fixed on the two said screw mandrel outsides.

Preferably, convex with block respectively on said first bearing and said second bearing, said block stops first support bar, second support bar respectively, and said first support bar is vertical with said support platform with said second support bar.

Preferably, two said screw mandrels are separately installed with fixed block in two ends separately, and two said screw mandrels are installed on the support platform through said fixed block respectively.

Correspondingly; inventive embodiments also provides a kind of display integral table; Comprise a body, display and aforesaid up-down desktop assembly; Said display keeps flat and is arranged on the said table body and said display and the pivot joint of said table body, and said up-down desktop assembly is installed in the said table body and amounts to the below that lies against said display, and said first bearing is fixedly mounted on the table body of said display table; Said display lifting stands on the upper surface of said table body, and upwards lifting is vertical with the upper surface of said table body until two said first support bars under the drive of said lead screw transmission mechanism for the up-down desktop of said up-down desktop assembly.

Through embodiment of the present invention, constructed a kind of up-down desktop assembly, this up-down desktop assembly receives the micro-machine Equipment Control; The output shaft of motor device is connected with screw mandrel through gear, drive screw mandrel and carry out transmission, thereby the nut slider that drives on the screw mandrel moves along the screw mandrel direction; Move along the screw mandrel direction thereby drive catch bar, the lifting up-down desktop that slowly makes progress, slowly lifting is vertical with support platform until two support bars with the up-down desktop for support bar simultaneously; Make up-down desktop parallel upright, correspondingly, said up-down desktop slowly folds downwards under the driving of motor device; Be superimposed together until catch bar, support bar and up-down desktop; It is little to take up room, and the lifting free folding and unfolding is applicable in the different device and applied environment.Said up-down desktop assembly, it is medium to be arranged on computer desk, desk, tea table, can supply to put keyboard, mouse etc., perhaps serves as stand, realizes the

multipurpose of fitment, satisfies the different demands of people's life, versatility and practical.Correspondingly, the present invention also provides a kind of display integral table with this up-down desktop assembly simultaneously, and display articulates with the table body, can realize lifting and keep flat.And desktop same table device is concealed under the display, and conserve space is when the user needs; Elder generation's lifting display is restarted lead screw transmission mechanism, lifting up-down desktop; Use; Simple and convenient, make household furniture merge intelligence, automation factor, for the user builds the comfortable digital home and the environment of digital home.

Description of drawings

In order to be illustrated more clearly in the embodiment of the invention or technical scheme of the prior art; To do to introduce simply to the accompanying drawing of required use in embodiment or the description of the Prior Art below; Obviously, the accompanying drawing in describing below only is some embodiments of the present invention, for those of ordinary skills; Under the prerequisite of not paying creative work property, can also obtain other accompanying drawing according to these accompanying drawings.

Fig. 1 is the structural representation of the up-down desktop assembly of the embodiment of the invention;

Fig. 2 is the enlarged diagram of A part among Fig. 1;

Fig. 3 is the structural representation of the display integral table of the embodiment of the invention;

Fig. 4 is the structural representation of another state of display integral table shown in Figure 3.

The specific embodiment

To combine the accompanying drawing in the embodiment of the invention below, the technical scheme in the embodiment of the invention is carried out clear, intactly description, obviously, described embodiment only is the present invention's part embodiment, rather than whole embodiment.Based on the embodiment among the present invention, those of ordinary skills are not making all other embodiment that obtained under the creative work prerequisite, all belong to the scope of the present invention's protection.

With reference to figure 1 and Fig. 2, corresponding, the embodiment of the invention provides a kind of up-down desktop assembly 10, is applicable to be arranged on the support platform, and said support platform can be learning desk, computer desk, tea table etc.Said up-down desktop assembly 10 comprises up-down desktop 200, lead screw transmission mechanism 100, first bearing 500, two catch bars 300 and two first support bars 400; Said lead screw transmission mechanism 100 comprise synchronizing wheel 110, synchronously with 120, motor device 130, two nut sliders 150 of output drive strength and two screw mandrels 140 that are set in parallel on the support platform that receive that motor device 130 drives; Two said nut sliders 150 are placed in respectively on two screw mandrels 140; Two synchronizing wheels 110 are fixedly arranged on the same end of two said screw mandrels 140 respectively, said be with synchronously 120 connect two said synchronizing wheel 110, two screw mandrels 140 one of them be connected through gear with the output shaft of motor device 130; Particularly; Be installed with screw mandrel 140 gears 142 on said and the screw mandrel 140 that motor device 130 is connected, the end of the output shaft 134 of motor device 130 is installed with motor gear 132, said screw mandrel 140 gears 142 and said motor gear 132 mutual Vertical Meshing; The output shaft 134 of said motor device 130 is vertical with said screw mandrel 140; Understandable, the output shaft 134 of said motor device 130 can be parallel with said screw mandrel 140, said motor gear 132 and 142 engagements of said screw mandrel 140 gears.Two said catch bar 300 1 ends are installed on the up-down desktop 200 with articulating respectively; Two said catch bar 300 other ends are installed on the nut slider 150 with articulating respectively; Said first bearing 500 is fixed on the said support platform; Two first support bars, 400 1 ends are installed on the up-down desktop 200 with articulating respectively, and two said first support bar, 400 other ends are installed on said first bearing 500 with articulating respectively, and said motor device 130 drives and drives synchronizing wheel 110 rotations; Synchronizing wheel 110 on another screw mandrel 140 is by being with 120 to drive realization rotation synchronously synchronously; Two screw mandrels 140 rotate under the drive of synchronizing wheel 110, and two nut sliders 150 move along screw mandrel 140 directions, move along screw mandrel 140 directions thereby drive catch bar 300; Slowly upwards lifting or fold downwards of the other end under two said catch bars 300 and the two said promotions that are supported on nut slider 150, upwards lifting is vertical with said support platform or fold downwards until two said first support bars 400 thereby drive up-down desktop 200.

Preferably; Said up-down desktop assembly 10 also comprises second bearing 700 and two second support bars 600; Said second bearing 700 is fixed on the said support platform; Said second support bar, 600 1 ends are installed on the up-down desktop 200 with articulating respectively, and two said second support bar, 600 other ends are installed on second bearing 700 with articulating respectively, two said second support bars 600 parallel respectively with two said first support bars 400 and consistent with the length of two said first support bars 400.Said first support bar 400, second support bar 600 are used for raising process at catch bar 300; Along with catch bar 300 slowly lifting together; When up-down desktop 200 is lifted to proper height, two first support bars 400, two second support bars 600 form the table pin of four vertical stand-ups of up-down desktops 200, firmly support said up-down desktop 200; Be appreciated that ground; Said up-down desktop 200 is preferably rectangle, and two said first support bars 400 are arranged on the end of up-down desktop 200 along the lifting direction, and two said second support bars 600 are arranged on the other end of up-down desktop 200 along the lifting direction.

In an embodiment of the present invention, said first bearing 500 is fixed between the two said screw mandrels 140, and said second bearing 700 is fixed on the outside of two said screw mandrels 140.Be appreciated that ground, as another embodiment of the present invention, said second bearing 700 also can fixedly be located between the two said screw mandrels 140, and said first bearing 500 is fixed on two said screw mandrels, 140 outsides.Through the fixing combination in inside and outside, make supporting construction more firmly firm.

Preferably; Convex with block 570 respectively on said first bearing 500 and said second bearing 700; Said block 570 stops first support bar 400, second support bar 600 respectively, and said first support bar 400 is vertical with said support platform with said second support bar 600.Said block 570 can prevent operation, prevented that catch bar 300 from reaching the maximum height continued operation of promotion, caused going up and down desktop 200 under the continuation in the same way of catch bar 300 promotes, to fold forward.

Preferably, two said screw mandrels 140 are separately installed with fixed block 160, two said screw mandrels 140 and are installed on the support platform through said fixed block 160 respectively in two ends separately.Said up-down desktop assembly 10 can be applied in the various environmental units, can make things convenient for the installation of screw mandrel 140 through said fixed block 160.

Correspondingly; With reference to figure 3 and Fig. 4; Inventive embodiments also provides a kind of display integral table, comprises a body 20, display 30 and aforesaid up-down desktop assembly 10, and said display 30 keeps flat and is arranged on the said table body 20 and said display 30 and said table body 20 pivot joints; Said display 30 drives in the screw mandrel transmission and can realize down that lifting stands on a body 20 or folds and lie against said body 20; The concrete structure of said display 30 and drive method specifically referring to another in first to file, application number is a related description in 201110396833.0 the invention application, no longer sets forth at this.Said up-down desktop assembly 10 is installed in the said table body 20 and amounts to the below that lies against said display 30; Said first bearing 500 is fixedly mounted on the table body 20 of 30 of said displays; Said display 30 liftings stand on the upper surface of said table body 20, and upwards lifting is vertical with the upper surface of said table body 20 until two said first support bars 400 under the drive of said lead screw transmission mechanism 100 for the up-down desktop 200 of said up-down desktop assembly 10.Preferably; It is in the opposite direction that said catch bar 300 and said first support bar 400, second support bar

600 are provided with; Promptly two first support bars 400, two second support bars 600 are respectively to away from the direction lifting over against display 30; To folding, and in up-down desktop 200 lifting processes near direction over against display 30, nut slider 150 promote catch bars 300 along screw mandrel 140 by near an end of the direction of display 30 to a end motion away from the direction of display 30; Fold in the process at up-down desktop 200, nut slider 150 promote catch bars 300 along screw mandrel 140 gradually to display 30 near moving.Be appreciated that ground; The direction that said catch bar 300 and said first support bar 400, second support bar 600 are provided with also can be consistent; During lifting up-down desktop 200, nut slider 150 by away from an end of the direction of display 30 to a end motion near the direction of display 30.

Pass through embodiment of the present invention; Constructed a kind of desktop assembly 10 and have the display integral table of this device of going up and down; This up-down desktop assembly 10 receives 130 controls of micro-machine equipment, and the output shaft of motor device 130 is connected with screw mandrel 140 through gear, drives screw mandrel 140 and carries out transmission; Thereby the nut slider 150 that drives on the screw mandrel 140 moves along screw mandrel 140 directions; Nut slider 150 promote catch bars 300 along screw mandrel 140 by near an end of the direction of display 30 to a end motion away from the direction of display 30, two first support bars 400, two second support bars 600 are respectively to away from the direction lifting over against display 30, thereby realize lifting up-down desktop 200; When folding, nut slider 150 promote catch bars 300 along screw mandrel 140 gradually to display 30 near moving.And two first support bars 400, two second support bars 600 are respectively to folding near the direction over against display 30; Thereby slowly upwards lifting or fold up-down desktop 200 downwards, when up-down desktop 200 was lifted to maximum height, first support bar 400, that second support bar 600 slowly is raised to two support bars with up-down desktop 200 was vertical with support platform; Make up-down desktop 200 parallel upright; Correspondingly, said up-down desktop 200 slowly folds downwards under the driving of motor device 130, and catch bar 300, support bar and up-down desktop 200 are superimposed together; Up-down desktop assembly 10 after folding can be hidden in the body 20 and be positioned at display 30 belows; it is little to take up room, and the lifting free folding and unfolding is applicable in the different device and applied environment.Said up-down desktop assembly 10, it is medium to be arranged on computer desk, desk, tea table, can supply to put keyboard, mouse etc., perhaps serves as stand, realizes the multipurpose of fitment, satisfies the different demands of people's life, versatility and practical.The display integral table of the embodiment of the invention, collection liftable keyboard desk, liftable display are one, display 30 articulates with table body 20, can realize lifting and keep flat.When up-down desktop 200 did not use, whole desktop same table device was concealed in display 30 times, conserve space; When the user needed, first lifting display 30 was restarted lead screw transmission mechanism 100; Lifting up-down desktop 200 uses, and is simple and convenient; Make household furniture merge intelligence, automation factor, for the user builds comfortable digital household environment.

Used concrete example among this paper principle of the present invention and embodiment are set forth, the explanation of above embodiment just is used for helping to understand method of the present invention and core concept thereof; Simultaneously, for one of ordinary skill in the art, according to thought of the present invention, the part that on the specific embodiment and range of application, all can change, in sum, this description should not be construed as limitation of the present invention.

Patent Citations (4)

Publication number	Priority date	Publication date	Assignee	Title
CN1625998A *	2003-12-12	2005-06-15	张成云	Over and under type multifunctional tea table
JP4409009B2 *	1999-10-26	2010-02-03	株式会社岡村製作所	Display storage type desk
CN201640949U *	2009-05-31	2010-11-24	陈丁	Computer table capable of regulating vertical height of tabletop
CN102293522A *	2011-06-14	2011-12-28	广州物联家信息科技股份有限公司	Three-in-one multifunctional tea table
Family To Family Citations				

* Cited by examiner, † Cited by third party

Cited By (10)

Publication number	Priority date	Publication date	Assignee	Title
CN102758996A *	2012-07-26	2012-10-31	广州物联家信息科技股份有限公司	Lifting and steering device
CN103211386A *	2013-04-15	2013-07-24	常州工学院	Notebook computer lifting platform
WO2018057751A1	2016-09-23	2018-03-29	Varidesk, Llc	Electrically-lifted computer desk and office desk thereof
CN109315924A *	2018-10-24	2019-02-12	林婕伟	A kind of height and the self-adjustable intelligent table of angle
CN109552138A *	2017-09-25	2019-04-02	佛吉亚内饰系统印度私营责任有限公司	Shelf for vehicle
CN111713860A *	2020-06-19	2020-09-29	北京德威环亚家具有限公司	Office table with negative oxygen ion coating and preparation method thereof
US10893748B1	2017-07-08	2021-01-19	Office Kick, Inc.	Height adjustable desktop
US11019920B2	2016-09-23	2021-06-01	Varidesk, Llc	Electrically-lifted computer desk and office desk thereof
US11134774B1	2015-01-24	2021-10-05	Office Kick, Inc.	Desktop workspace that adjusts vertically
US11219307B2	2016-07-08	2022-01-11	Versa Products, Inc.	Motorized, height-adjustable desktop system
Family To Family Citations				

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
CN102599728B	2014-07-16	Lifting desktop device and display integrated desk with same
CN102511987B	2014-12-10	Stretching and lifting device and integrated table with same for displayer
CN202618792U	2012-12-26	Lifting table top device and displayer all-in-one table comprising the same
CN201002931Y	2008-01-09	Hoisting device with foldable suspension arm
CN104026872B	2017-01-11	Multifunctional transformable desk in classroom
CN202698229U	2013-01-30	Automatic lifting desk
CN202365168U	2012-08-08	Stretching and lifting device and display integrated table with same
CN105686746A	2016-06-22	Lifting device
CN105967119A	2016-09-28	Lifting platform car capable of flexibly regulating height and moving
CN102758996A	2012-10-31	Lifting and steering device
CN202493651U	2012-10-17	Belt transmission mechanism, display and display integrated table
CN202457090U	2012-10-03	Lead screw transmission mechanism, table top device, displayer and table integrated with displayer
CN203762559U	2014-08-13	Multifunctional dining table
CN102661376B	2015-12-16	A kind of belt gear, display device and display device integral table
CN102273818A	2011-12-14	Desk integrating electronic device
CN102132997B	2014-08-13	Telescopic automatic control desk
CN102488386B	2014-03-19	Lead screw transmission mechanism, table top device, displayer and table integrated with displayer
CN102597328B	2014-10-15	Steel wire transmission mechanism, display and display integrated desk
CN201968074U	2011-09-14	Automatically controlled telescopic table
CN102178395A	2011-09-14	Integrated computer desk
CN210643465U	2020-06-02	Portable visual transmission design display rack
CN210144135U	2020-03-17	Diameter-variable folding dining table with folding device
CN202069163U	2011-12-14	Desk integrating electronic equipment
CN202628967U	2012-12-26	Steel wire transmission mechanism, display and display integral table
CN204363335U	2015-06-03	Mechanical arm type painting and calligraphy The Cloud Terrace

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
CN201210092111.0A	2012-03-30	2012-03-30	Lifting desktop device and display integrated desk with same

Applications Claiming Priority (1)

Application	Filing date	Title
CN201210092111.0A	2012-03-30	Lifting desktop device and display integrated desk with same

Legal Events

Date	Code	Title	Description
2012-07-25	C06	Publication	
2012-07-25	PB01	Publication	
2012-09-26	C10	Entry into substantive examination	

2012-09-26	SE01	Entry into force of request for substantive examination	
2014-07-16	C14	Grant of patent or utility model	
2014-07-16	GR01	Patent grant	
2018-04-17	CF01	Termination of patent right due to non-payment of annual fee	
2018-04-17	CF01	Termination of patent right due to non-payment of annual fee	**Granted publication date:** 20140716 **Termination date:** 20170330

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
biological transmission		claims,abstract,description	23	0.000
synchronised		claims,abstract,description	11	0.000
Camellia sinensis var. sinensis		abstract	1	0.000

Show all concepts from the description section

(19)中华人民共和国国家知识产权局

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(72)发明人 许希明

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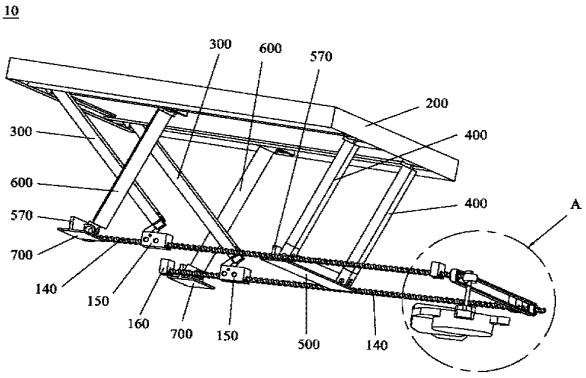
权利要求书 1 页 说明书 5 页 附图 4 页

(54)发明名称

升降桌面装置及具有该装置的显示器一体桌

(57)摘要

本发明公开了一种升降桌面装置，包括升降桌面、丝杆传动机构、第一支座、两推动杆及两第一支撑杆，丝杆传动机构包括同步轮、同步带、电机设备、两螺母滑块以及两丝杆，两螺母滑块分别套于两丝杆上，两同步轮分别固设于两丝杆的同一端，同步带连接两同步轮，两丝杆之一与电机设备连接，推动杆一端枢接在升降桌面上，另一端枢接在螺母滑块上，第一支撑杆一端枢接在升降桌面上，另一端枢接在第一支座上，升降桌面在电机设备驱动下向上抬升或向下收合。本发明同时公开了一种具有所述装置的显示器一体桌。本发明的升降桌面装置，适用于各种电脑桌、课桌、茶几等环境，可供置放键盘鼠标，升降桌面自由抬升收合，小巧灵活，通用性实用性强。



CN 102599728 A

1. 一种升降桌面装置，适用于设置在支撑平台上，其特征在于，包括升降桌面、丝杆传动机构、第一支座、两推动杆及两第一支撑杆，所述丝杆传动机构包括同步轮、同步带、输出驱动力的电机设备、两螺母滑块以及受电机设备驱动的两平行设置在支撑平台上的丝杆，两所述螺母滑块分别套于两丝杆上，两同步轮分别固设于两所述丝杆的同一端，所述同步带连接两所述同步轮，两丝杆的其中之一与电机设备的输出轴通过齿轮连接，两所述推动杆一端分别枢接地安装在升降桌面上，两所述推动杆另一端分别枢接地安装在螺母滑块上，所述第一支座固定在所述支撑平台上，两第一支撑杆一端分别枢接地安装在升降桌面上，两所述第一支撑杆另一端分别枢接地安装在所述第一支座上，所述电机设备驱动带动同步轮旋转，另一丝杆上的同步轮由同步带带动实现同步转动，两丝杆在同步轮的带动下旋转，两螺母滑块沿着丝杆方向运动，从而带动推动杆沿着丝杆方向运动，两所述推动杆与两所述支撑在螺母滑块的推动下另一端慢慢向上抬升或向下收合，从而带动升降桌面向上抬升直至两所述支撑杆与所述支撑平台垂直或向下收合。

2. 如权利要求 1 所述的丝杆传动机构，其特征在于，所述升降桌面装置还包括第二支座及两第二支撑杆，所述第二支座固定在所述支撑平台上，所述第二支撑杆一端分别枢接地安装在升降桌面上，两所述第二支撑杆另一端分别枢接地安装在第二支座上，两所述第二支撑杆分别平行与两所述第一支撑杆且与两所述第一支撑杆的长度一致。

3. 如权利要求 2 所述的丝杆传动机构，其特征在于，所述第一支座固定在两所述丝杆之间，所述第二支座固定在两所述丝杆的外侧。

4. 如权利要求 2 所述的丝杆传动机构，其特征在于，所述第二支座固定在两所述丝杆之间，所述第一支座固定在两所述丝杆外侧。

5. 如权利要求 3 或 4 所述的丝杆传动机构，其特征在于，所述第一支座与所述第二支座上分别凸设有挡块，所述挡块分别阻挡第一支撑杆、第二支撑杆，所述第一支撑杆与所述第二支撑杆与所述支撑平台垂直。

6. 如权利要求 1 所述的丝杆传动机构，其特征在于，两所述丝杆各自两端分别安装有固定块，两所述丝杆分别通过所述固定块安装到支撑平台上。

7. 一种显示器一体桌，其特征在于，包括桌体、显示器以及如权利要求 1 所述的升降桌面装置，所述显示器平放设置在所述桌体上且所述显示器与所述桌体枢接，所述升降桌面装置安装在所述桌体内且折合平放于所述显示器的下方，所述第一支座固定安装在所述显示器桌的桌体上，所述显示器抬升直立于所述桌体的上表面，所述升降桌面装置的升降桌面在所述丝杆传动机构的带动下向上抬升直至两所述第一支撑杆与所述桌体的上表面垂直。

升降桌面装置及具有该装置的显示器一体桌

技术领域

[0001] 本发明涉及数字家具技术领域，具体涉及一种升降桌面装置及具有该装置的显示器一体桌。

背景技术

[0002] 随着数字家庭的越来越普及，人们的家居生活发生着翻天覆地的变化，其中，数字自动化设计融入现代数字家居越来越成为最为突出的优点。在家庭环境中，桌子已经具有多种功能融入到人们生活中，现有阶段中普通适用于餐桌、电脑桌、学习桌等等，但目前的桌子功能比较单一，不能满足多用化的需求，如何更好地结合数字电子科技、自动化技术提高桌子的功能，节省家居空间，使用户更好地享受数字家居的乐趣，营造数字家庭环境是人们一直研究的热点问题。

[0003] 现有的升降传动装置一般都是应用于工业控制或者精密设备方面比较多，比较少应用于家庭办公设备中，传动的升降传动装置都是粗大，没办法做得比较细小满足在数字家居设备中，满足人们日益增长的需求。

发明内容

[0004] 为解决现有升降装置无法融入到现有的家具设备中，本发明实施例提供一种升降桌面装置及具有该装置的显示器一体桌，将丝杆传动的升降装置应用到数字家具设备中。

[0005] 相应的，本发明实施例提供了一种升降桌面装置，适用于设置在支撑平台上，所述升降桌面装置包括升降桌面、丝杆传动机构、第一支座、两推动杆及两第一支撑杆，所述丝杆传动机构包括同步轮、同步带、输出驱动力的电机设备、两螺母滑块以及受电机设备驱动的两平行设置在支撑平台上的丝杆，两所述螺母滑块分别套于两丝杆上，两同步轮分别固设于两所述丝杆的同一端，所述同步带连接两所述同步轮，两丝杆的其中之一与电机设备的输出轴通过齿轮连接，两所述推动杆一端分别枢接地安装在升降桌面上，两所述推动杆另一端分别枢接地安装在螺母滑块上，两第一支撑杆一端分别枢接地安装在升降桌面上，所述第一支座固定在所述支撑平台上，两所述第一支撑杆另一端分别枢接地安装在所述第一支座上，所述电机设备驱动带动同步轮旋转，另一丝杆上的同步轮由同步带带动实现同步转动，两丝杆在同步轮的带动下旋转，两螺母滑块沿着丝杆方向运动，从而带动推动杆沿着丝杆方向运动，两所述推动杆与两所述支撑在螺母滑块的推动下另一端慢慢向上抬升或向下收合，从而带动升降桌面向上抬升直至两所述支撑杆与所述支撑平台垂直或向下收合。

[0006] 较佳地，所述升降桌面装置还包括第二支座及两第二支撑杆，所述第二支座固定在所述支撑平台上，所述第二支撑杆一端分别枢接地安装在升降桌面上，两所述第二支撑杆另一端分别枢接地安装在第二支座上，两所述第二支撑杆分别平行与两所述第一支撑杆且与两所述第一支撑杆的长度一致。

[0007] 作为本发明的一实施例，所述第一支座固定在两所述丝杆之间，所述第二支座固

定在两所述丝杆的外侧。

[0008] 作为本发明的另一实施例，所述第二支座固定在两所述丝杆之间，所述第一支座固定在两所述丝杆外侧。

[0009] 较佳地，所述第一支座与所述第二支座上分别凸设有挡块，所述挡块分别阻挡第一支撑杆、第二支撑杆，所述第一支撑杆与所述第二支撑杆与所述支撑平台垂直。

[0010] 较佳地，两所述丝杆各自两端分别安装有固定块，两所述丝杆分别通过所述固定块安装到支撑平台上。

[0011] 相应地，发明实施例还提供了一种显示器一体桌，包括桌体、显示器以及如上所述的升降桌面装置，所述显示器平放设置在所述桌体上且所述显示器与所述桌体枢接，所述升降桌面装置安装在所述桌体内且折合平放于所述显示器的下方，所述第一支座固定安装在所述显示器桌的桌体上，所述显示器抬升直立于所述桌体的上表面，所述升降桌面装置的升降桌面在所述丝杆传动机构的带动下向上抬升直至两所述第一支撑杆与所述桌体的上表面垂直。

[0012] 通过实施本发明，构造了一种升降桌面装置，该升降桌面装置受小型电机设备控制，电机设备的输出轴通过齿轮与丝杆连接，带动丝杆进行传动，从而带动丝杆上的螺母滑块沿着丝杆方向运动，从而带动推动杆沿丝杆方向运动，慢慢向上抬升升降桌面，同时支撑杆随升降桌面一起慢慢抬升直至两支撑杆与支撑平台垂直，使升降桌面平行直立起来，相应地，所述升降桌面在电机设备的驱动下慢慢向下收合，直至推动杆、支撑杆及升降桌面叠合在一起，占用空间小，抬升收合自如，适用于不同的装置与应用环境中。所述升降桌面装置，可以设置在电脑桌、课桌、茶几中等，可供置放键盘、鼠标等，或者充当小桌子，实现家具设备的多用途，满足人们生活的不同需求，通用性及实用性强。相应地，本发明同时还提供了一种具有该升降桌面装置的显示器一体桌，显示器与桌体枢接，可实现抬升与平放。而桌面升降桌装置收藏于显示器下，节约空间，当用户需要时，先抬升显示器，再启动丝杆传动机构，抬升升降桌面，进行使用，简单方便，使家居家具融合智能、自动化因素，为用户营造舒适的数字家居和数字家庭的环境。

附图说明

[0013] 为了更清楚地说明本发明实施例或现有技术中的技术方案，下面将对实施例或现有技术描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本发明的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动性的前提下，还可以根据这些附图获得其他的附图。

[0014] 图 1 为本发明实施例的升降桌面装置的结构示意图；

[0015] 图 2 为图 1 中 A 部分的放大示意图；

[0016] 图 3 为本发明实施例的显示器一体桌的结构示意图；

[0017] 图 4 为图 3 所示显示器一体桌的另一状态的结构示意图。

具体实施方式

[0018] 下面将结合本发明实施例中的附图，对本发明实施例中的技术方案进行清楚、完整地描述，显然，所描述的实施例仅仅是本发明一部分实施例，而不是全部的实施例。基于

本发明中的实施例，本领域普通技术人员在没有作出创造性劳动前提下所获得的所有其它实施例，都属于本发明保护的范围。

[0019] 参考图 1 及图 2，相应的，本发明实施例提供了一种升降桌面装置 10，适用于设置在支撑平台上，所述支撑平台可以是学习桌、电脑桌、茶几等。所述升降桌面装置 10 包括升降桌面 200、丝杆传动机构 100、第一支座 500、两推动杆 300 及两第一支撑杆 400，所述丝杆传动机构 100 包括同步轮 110、同步带 120、输出驱动力的电机设备 130、两螺母滑块 150 以及受电机设备 130 驱动的两平行设置在支撑平台上的丝杆 140，两所述螺母滑块 150 分别套于两丝杆 140 上，两同步轮 110 分别固设于两所述丝杆 140 的同一端，所述同步带 120 连接两所述同步轮 110，两丝杆 140 的其中之一与电机设备 130 的输出轴通过齿轮连接，具体地，所述与电机设备 130 连接的丝杆 140 上固设有丝杆 140 齿轮 142，电机设备 130 的输出轴 134 的末端固设有电机齿轮 132，所述丝杆 140 齿轮 142 与所述电机齿轮 132 相互垂直啮合，所述电机设备 130 的输出轴 134 与所述丝杆 140 垂直，可以理解的，所述电机设备 130 的输出轴 134 可以与所述丝杆 140 平行，所述电机齿轮 132 与所述丝杆 140 齿轮 142 啮合。两所述推动杆 300 一端分别枢接地安装在升降桌面 200 上，两所述推动杆 300 另一端分别枢接地安装在螺母滑块 150 上，所述第一支座 500 固定在所述支撑平台上，两第一支撑杆 400 一端分别枢接地安装在升降桌面 200 上，两所述第一支撑杆 400 另一端分别枢接地安装在所述第一支座 500 上，所述电机设备 130 驱动带动同步轮 110 旋转，另一丝杆 140 上的同步轮 110 由同步带 120 带动实现同步转动，两丝杆 140 在同步轮 110 的带动下旋转，两螺母滑块 150 沿着丝杆 140 方向运动，从而带动推动杆 300 沿着丝杆 140 方向运动，两所述推动杆 300 与两所述支撑在螺母滑块 150 的推动下另一端慢慢向上抬升或向下收合，从而带动升降桌面 200 向上抬升直至两所述第一支撑杆 400 与所述支撑平台垂直或向下收合。

[0020] 较佳地，所述升降桌面装置 10 还包括第二支座 700 及两第二支撑杆 600，所述第二支座 700 固定在所述支撑平台上，所述第二支撑杆 600 一端分别枢接地安装在升降桌面 200 上，两所述第二支撑杆 600 另一端分别枢接地安装在第二支座 700 上，两所述第二支撑杆 600 分别平行与两所述第一支撑杆 400 且与两所述第一支撑杆 400 的长度一致。所述第一支撑杆 400、第二支撑杆 600 用于在推动杆 300 推升过程中，随着推动杆 300 一起慢慢抬升，当升降桌面 200 被抬升到合适高度，两第一支撑杆 400、两第二支撑杆 600 形成升降桌面 200 的四个垂直直立的桌脚，稳固地支撑所述升降桌面 200，可以理解地，所述升降桌面 200 优选为长方形，两所述第一支撑杆 400 设置在升降桌面 200 沿抬升方向的一端，两所述第二支撑杆 600 设置在升降桌面 200 沿抬升方向的另一端。

[0021] 在本发明的实施例中，所述第一支座 500 固定在两所述丝杆 140 之间，所述第二支座 700 固定在两所述丝杆 140 的外侧。可以理解地，作为本发明的另一实施例，所述第二支座 700 也可以固定设在两所述丝杆 140 之间，所述第一支座 500 固定在两所述丝杆 140 外侧。通过里外固定的结合，使支撑结构更稳固牢靠。

[0022] 较佳地，所述第一支座 500 与所述第二支座 700 上分别凸设有挡块 570，所述挡块 570 分别阻挡第一支撑杆 400、第二支撑杆 600，所述第一支撑杆 400 与所述第二支撑杆 600 与所述支撑平台垂直。所述挡块 570 可以防止过操作，防止推动杆 300 达到推动的最高高度后继续操作，导致升降桌面 200 在推动杆 300 的同向继续推动下向前收合。

[0023] 较佳地，两所述丝杆 140 各自两端分别安装有固定块 160，两所述丝杆 140 分别通

过所述固定块 160 安装到支撑平台上。所述升降桌面装置 10 可以应用于各种环境设备中，通过所述固定块 160 可以方便丝杆 140 的安装。

[0024] 相应地，参考图 3 及图 4，发明实施例还提供了一种显示器一体桌，包括桌体 20、显示器 30 以及如上所述的升降桌面装置 10，所述显示器 30 平放设置在所述桌体 20 上且所述显示器 30 与所述桌体 20 枢接，所述显示器 30 在丝杆传动带动下可以实现抬升直立于桌体 20 或收合平放于所述桌体 20，所述显示器 30 的具体结构及传动方法具体参见另一在先申请，申请号为 201110396833.0 的发明申请中相关说明，在此不再阐述。所述升降桌面装置 10 安装在所述桌体 20 内且折合平放于所述显示器 30 的下方，所述第一支座 500 固定安装在所述显示器 30 桌的桌体 20 上，所述显示器 30 抬升直立于所述桌体 20 的上表面，所述升降桌面装置 10 的升降桌面 200 在所述丝杆传动机构 100 的带动下向上抬升直至两所述第一支撑杆 400 与所述桌体 20 的上表面垂直。较佳地，所述推动杆 300 与所述第一支撑杆 400、第二支撑杆 600 设置的方向相反，即两第一支撑杆 400、两第二支撑杆 600 分别向远离正对显示器 30 的方向抬升，向靠近正对显示器 30 的方向收合，而在升降桌面 200 抬升过程中，螺母滑块 150 推动推动杆 300 沿丝杆 140 由靠近显示器 30 的方向的一端向远离显示器 30 的方向的一端运动，在升降桌面 200 收合过程中，螺母滑块 150 推动推动杆 300 沿丝杆 140 逐渐向显示器 30 靠近运动。可以理解地，所述推动杆 300 与所述第一支撑杆 400、第二支撑杆 600 设置的方向也可以一致，抬升升降桌面 200 时，螺母滑块 150 由远离显示器 30 的方向的一端向靠近显示器 30 的方向的一端运动。

[0025] 通过实施本发明，构造了一种升降桌面装置 10 及具有该装置的显示器一体桌，该升降桌面装置 10 受小型电机设备 130 控制，电机设备 130 的输出轴通过齿轮与丝杆 140 连接，带动丝杆 140 进行传动，从而带动丝杆 140 上的螺母滑块 150 沿着丝杆 140 方向运动，螺母滑块 150 推动推动杆 300 沿丝杆 140 由靠近显示器 30 的方向的一端向远离显示器 30 的方向的一端运动，两第一支撑杆 400、两第二支撑杆 600 分别向远离正对显示器 30 的方向抬升，从而实现抬升升降桌面 200，收合时，螺母滑块 150 推动推动杆 300 沿丝杆 140 逐渐向显示器 30 靠近运动。而两第一支撑杆 400、两第二支撑杆 600 分别向靠近正对显示器 30 的方向收合，从而慢慢向上抬升或向下收合升降桌面 200，当升降桌面 200 被抬升到最高高度时，第一支撑杆 400、第二支撑杆 600 随升降桌面 200 一起慢慢抬升至两支撑杆与支撑平台垂直，使升降桌面 200 平行直立起来，相应地，所述升降桌面 200 在电机设备 130 的驱动下慢慢向下收合，推动杆 300、支撑杆及升降桌面 200 叠合在一起，收合后的升降桌面装置 10 可隐藏于桌体 20 内并位于显示器 30 下方，占用空间小，抬升收合自如，适用于不同的装置与应用环境中。所述升降桌面装置 10，可以设置在电脑桌、课桌、茶几中等，可供置放键盘、鼠标等，或者充当小桌子，实现家具设备的多用途，满足人们生活的不同需求，通用性及实用性强。本发明实施例的显示器一体桌，集可升降键盘桌子、可升降显示器为一体，显示器 30 与桌体 20 枢接，可实现抬升与平放。升降桌面 200 不使用时，整个桌面升降桌装置收藏于显示器 30 下，节约空间，当用户需要时，先抬升显示器 30，再启动丝杆传动机构 100，抬升升降桌面 200，进行使用，简单方便，使家居家具融合智能、自动化因素，为用户营造舒适的数字家庭环境。

[0026] 本文中应用了具体个例对本发明的原理及实施方式进行了阐述，以上实施例的说明只是用于帮助理解本发明的方法及其核心思想；同时，对于本领域的一般技术人员，依据

本发明的思想，在具体实施方式及应用范围上均会有改变之处，综上所述，本说明书内容不应理解为对本发明的限制。

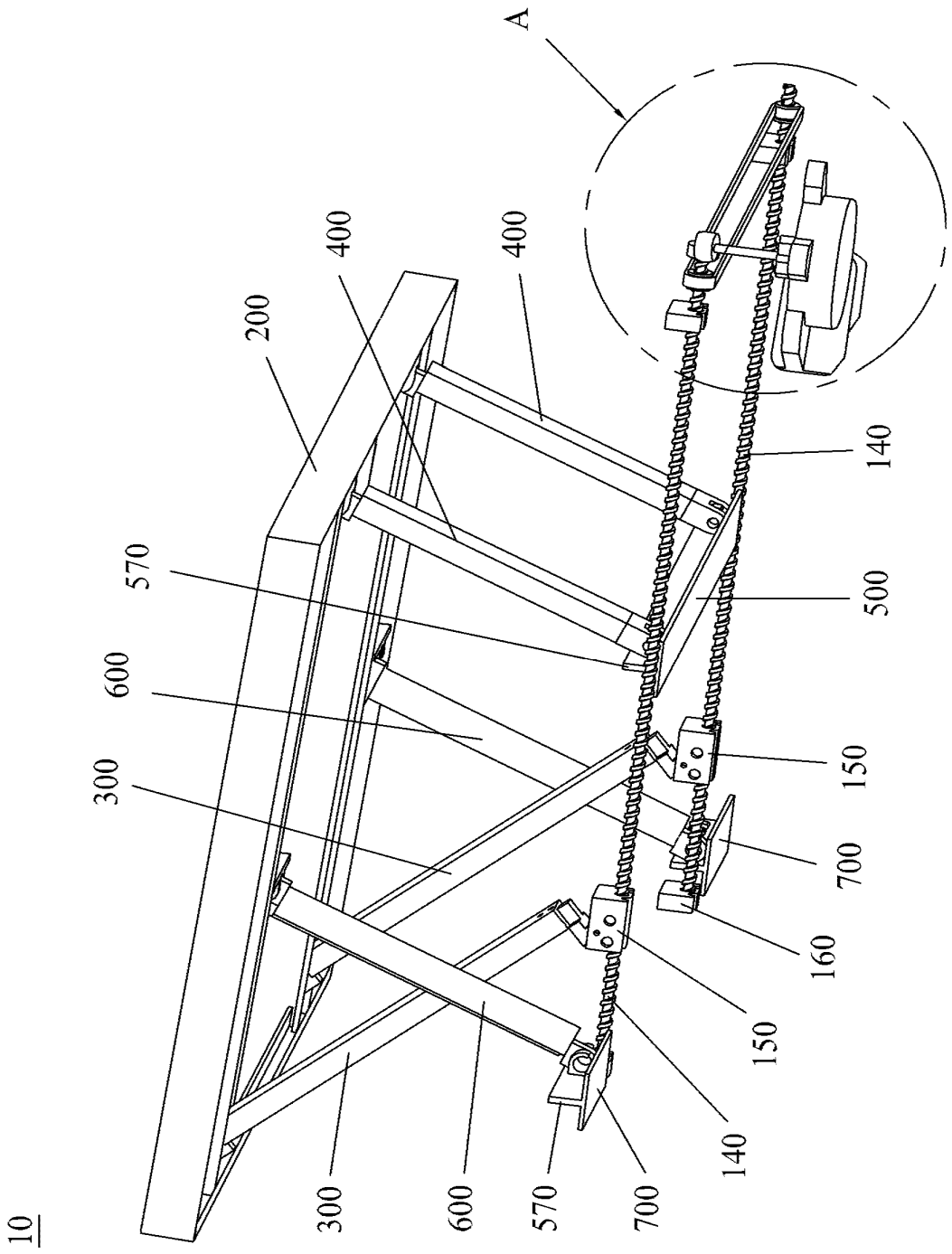

A
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200
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160
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570
700

图 1

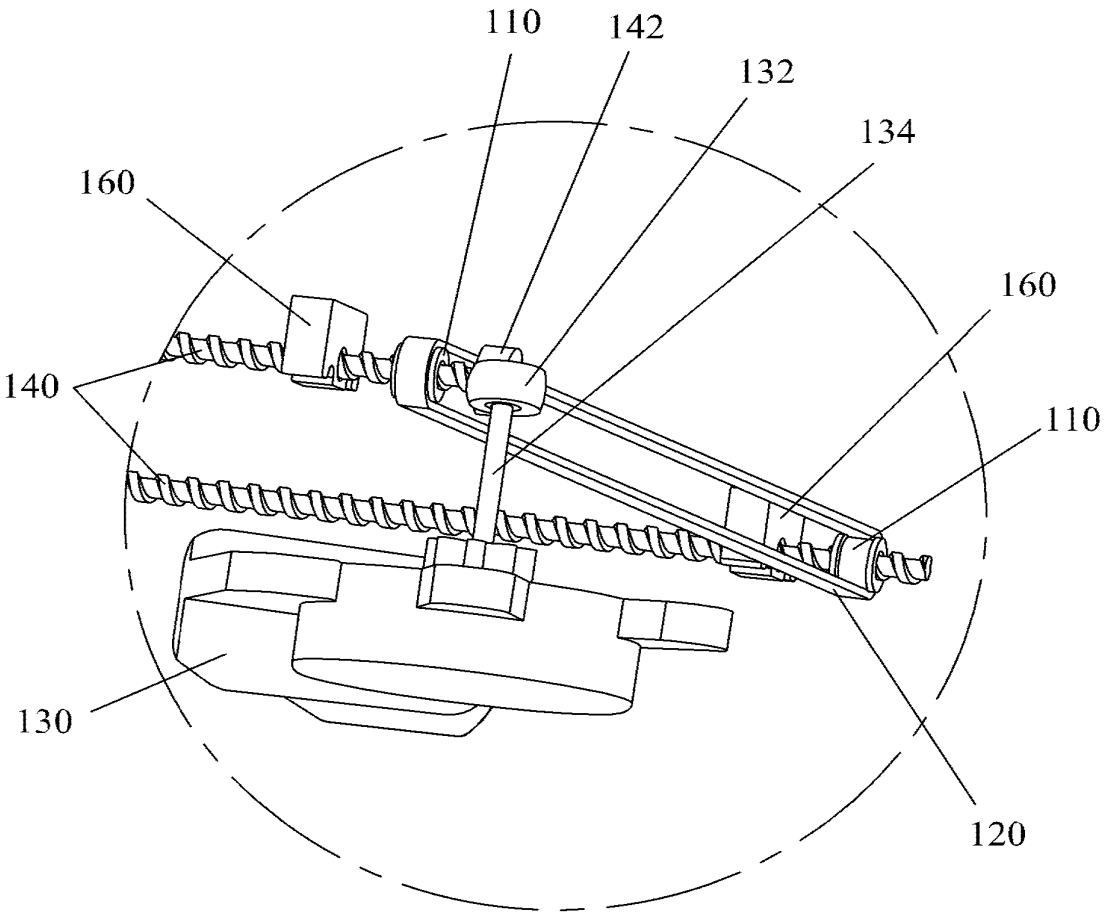


图 2

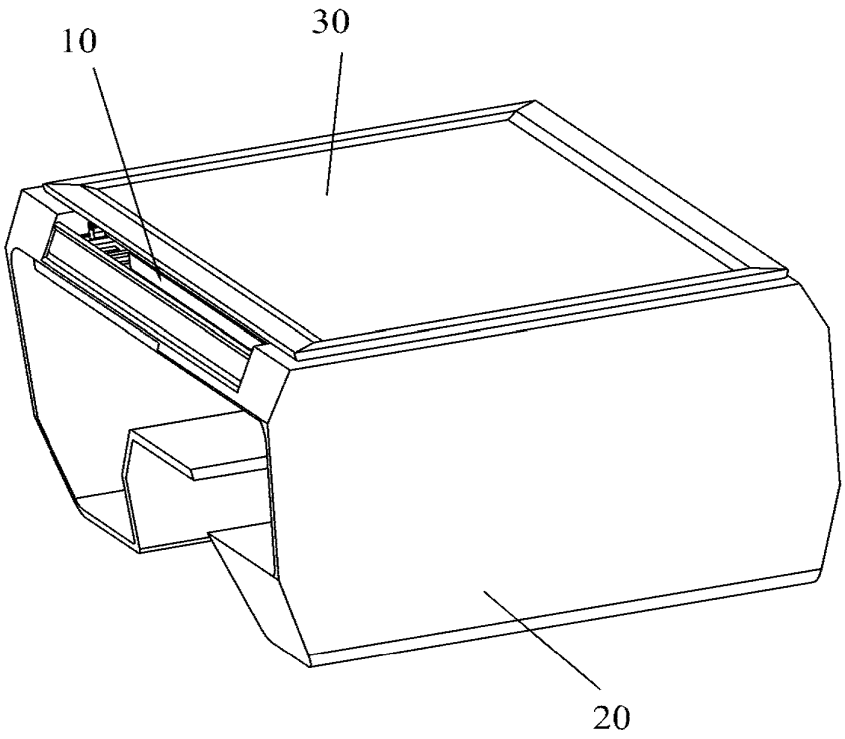


图 3

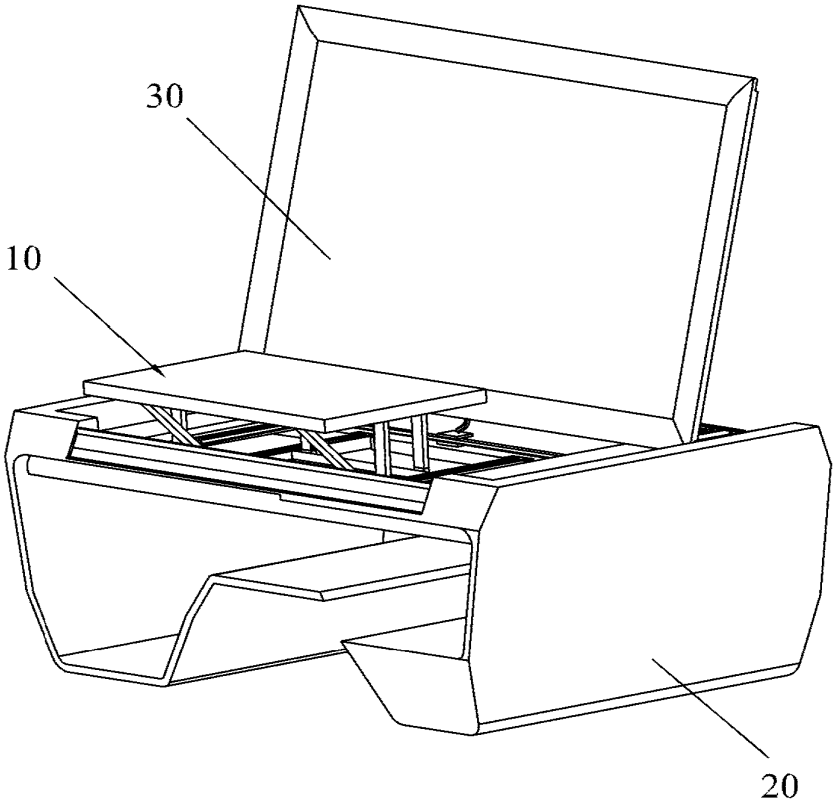


图 4

DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation application of U.S. Patent Application No. 17/493,812, titled DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY, filed October 4, 2021, which is a continuation application of U.S. Patent Application No. 16/785,647, titled DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY, issued as U.S. Patent No. 11,134,773 on October 5, 2021, which is a continuation application of U.S. Patent Application No. 16/372,334, titled DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY, issued as U.S. Patent No. 10,575,630 on March 3, 2020, which is a divisional application of 15/628,558, titled DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY, issued as U.S. Patent No. 10,244,861 on April 2, 2019, which is a divisional application of U.S. Patent Application No. 15/004,926, titled DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY, filed January 23, 2016, now abandoned, which claims the benefit of U.S. Provisional Patent Application No. 62/107,380, titled DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY, filed January 24, 2015. The entire contents of each of these related applications is incorporated by reference herein.

TECHNICAL FIELD

[0002] This disclosure relates to a desktop workspace platform that adjusts up and down vertically.

BACKGROUND

[0003] In recent years studies have been conducted to show the health benefits of not sitting or standing for prolonged periods of time. It has been shown that sitting for long periods of time, day after day, increases the rate of all-cause mortality. It has even been said that sitting is the new smoking. A healthier work environment could be achieved by standing a portion of your day that you typically spend sitting. A combination of standing and sitting can reduce your risk of obesity, diabetes, cardiovascular disease and cancer.

[0004] There are many different types of work surfaces today. Most of these are stationary, in that they do not adjust in height. In recent years, entire desks that adjust in height have become

more common. Most people already have a stationary desk, so purchasing an entire new desk may be unreasonable for some.

SUMMARY

[0005] There are a few adjustable desk platforms that sit on an existing desk, however, designs of such products have left much room for improvement. Some notable areas for improvement include, but are not limited to; the need for straight vertical motion of the desktop platform where the work surface does not protrude out toward the operator when elevated, a motorized adjustable height mechanism or other motor assisted system, a holding or locking mechanism that does not limit the work surface to only preset heights, a higher maximum adjustable height to satisfy taller users, improved load distribution, improved design, improved appearance, increased load capacity, and a more compact design once in a lowered position.

[0006] A desktop workspace that adjusts vertically includes a work surface platform that acts as a work surface platform. A height adjustment mechanism allows the work surface platform to raise and lower to the desired height of the operator. This desktop workspace includes at least one set of arms as part of the height adjustment mechanism that utilizes a scissor motion to move the work surface platform up and down.

[0007] In one example, a desktop workspace that adjusts vertically is comprised of a work surface platform; a base configured to sit on an existing platform such as a desk; a height adjustable mechanism including at least one set of arms that connect at a pivot point creating a scissoring motion as part of the method to raise and lower the said work surface platform to various heights.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a perspective view of an example adjustable desk including a work surface platform, base, and height adjustment mechanism.

[0009] FIG. 1B is a perspective view of an example adjustable desk including a work surface platform, base, and height adjustment mechanism, with alternative sliding mechanisms.

[0010] FIG. 1C is a perspective view of an example adjustable desk with alternative sliding mechanisms that incorporate rolling wheels, and a keyboard tray mechanism.

[0011] FIG. 1D is a perspective view of an example adjustable desk with alternative sliding mechanisms that incorporate rolling wheels, and a keyboard tray mechanism as shown in FIG. 1C, but without a base.

[0012] FIG. 2 is a perspective view from another angle of an example adjustable desk including a work surface platform, base, and height adjustment mechanism.

[0013] FIG. 2B is a perspective view from another angle of an example adjustable desk including a work surface platform, base, and height adjustment mechanism, with alternative sliding mechanisms.

[0014] FIG. 2C is a perspective view from another angle of an example adjustable desk with alternative sliding mechanisms that incorporate rolling wheels and a keyboard tray mechanism.

[0015] FIG. 2D is a perspective view an example adjustable desk with the alternative sliding mechanisms that incorporates rolling wheels and a keyboard tray mechanism as shown in FIG. 2C, but with gas springs rather than coil springs.

[0016] FIG. 3 is a side view of an example adjustable desk including a work surface platform, base, and height adjustment mechanism.

[0017] FIG. 3B is a side view of an example adjustable desk including a work surface platform, base, height adjustment mechanism, alternative sliding mechanisms, and a keyboard tray mechanism.

[0018] FIG. 4 is a perspective view of an example height adjustment mechanism from FIG. 1.

[0019] FIG. 4B is a perspective view of an example height adjustment mechanism as shown in FIG. 4, but without a cross beam.

[0020] FIG. 5 is a perspective view of parts of an example adjustable desk including sliding mechanism locations and pivot points of this disclosure from FIG. 1.

[0021] FIG. 5B is a perspective view of parts of an example of a height adjustment mechanism of this disclosure from FIG. 1 and 1B with alternative sliding mechanisms.

[0022] FIG. 5C is a perspective view of parts of an example of a height adjustment mechanism from FIG. 1 and 1B with alternative sliding mechanisms.

[0023] FIG. 5D is a perspective view of parts of an example of a height adjustment mechanism and locking mechanism from FIG. 1C.

[0024] FIG. 6 is a perspective view of an example adjustable desk wherein the work surface platform is in a partially raised state.

[0025] FIG. 6B is a perspective view of an example adjustable desk where the work surface platform is in a partially raised state with an example keyboard tray mechanism.

[0026] FIG. 7 is a perspective view of an example adjustable desk in a very compact state, with the work surface platform in a completely lowered position.

[0027] FIG. 7B is a perspective view of an example adjustable desk in a very compact state, with the work surface platform in a completely lowered position, with alternative sliding mechanisms.

[0028] FIG. 8 is a perspective view of example elements intended to additionally raise the height of monitors or other items.

[0029] FIG. 9 is a perspective view of an example adjustable desk with monitor raising elements resting on top of the work surface platform.

[0030] FIG. 10 is a perspective view of parts of an example of a keyboard tray mechanism.

[0031] FIG. 10B is a perspective view of an example adjustable desk with an alternative keyboard tray mechanism attached.

[0032] FIG. 10C is a perspective view of an example adjustable desk with keyboard tray mechanism attached and in a closed position.

DETAILED DESCRIPTION

[0033] The Desktop Workspace That Adjusts Vertically, also referred to as the "desktop workspace" in this document, includes a device and a method to raise and lower a platform that is part of the device. An exemplary use of the device is a work surface such as a desk, which can be moved to a desired vertical position. For example, the platform could hold objects such as a laptop, monitor, tablet, keyboard, mouse, and other desk items such as a stapler. The Desktop Workspace That Adjusts Vertically may include ancillary devices such as a monitor raiser, an external keyboard holder, mouse holder, cable organizer, or other devices. The platform raises vertically without protruding out along the horizontal plane, keeping the individual using the device from having to step backward to use the work surface platform when it is in a raised position. This configuration allows the operator to utilize the work surface platform at various heights. The examples and description suggest the device is used for supporting typical desktop objects, but the scope of this disclosure is intended to support other objects and to be used in other applications.

[0034] The Desktop Workspace That Adjusts Vertically can be placed on an existing surface to provide a variable height working area that is adjusted by the operator. The Desktop Workspace That Adjusts Vertically includes at least one set of two arms that connect along their lengths at a pivot point, allowing a scissoring motion, which is part of the method for raising and lowering the work surface platform. When raised, the work surface platform raises in a substantially straight motion so that it stays in-line with the base. An element or mechanism such as a spring or motor is configured to provide a force to assist in the elevation of the work surface platform. A locking mechanism is configured to secure the work surface platform at a given height.

[0035] The Desktop Workspace That Adjusts Vertically includes a height adjustment mechanism configured to assist in raising the work surface platform parallel to the surface it sits on, without moving back and forth or left to right; keeping the individual using the device from having to move backward to use the work surface platform when it is in a raised position. The height adjustment mechanism(s) may include items such as springs, gas springs, shock absorbers, an electric motor(s), or a linear actuator(s).

[0036] The Desktop Workspace That Adjusts Vertically is directed to help individuals from sitting or standing for prolonged periods of time while they work. Studies have shown that sitting or standing for long periods of time can be detrimental to one's health.

[0037] The Desktop Workspace That Adjusts Vertically is designed to assist individuals to be more alert and productive as they work. Studies show that moving from a sitting to standing position and vice versa help the human body to be more awake and alert.

[0038] FIG. 1, 1B, 1C, 2, 2B, 2C, 6, 7, 7B, 9, and 10C show examples of The Desktop Workspace That Adjusts Vertically an assembled state. As shown, the desktop workspace includes a work surface platform 10, a base 12, and a height adjustment mechanism 14 residing between the work surface platform 10 and base 12. The examples show that platform 10 is a work surface platform that supports desk items; for example, monitors, tablets, Computers, notebooks, and other objects. The height adjustment example 14 includes at least one set of two arms 16 & 18. Arms 16 & 18 are connected at some point along their shafts at pivot point 28**.** These pivoting arms connect at pivot points 24 and 26 on one end and slide along a sliding mechanism 20 or 22 at pivot and sliding point 30 or 32. The arms pivot at 28, arm 16 slides along 20 and arm 18 slides along 22, creating a scissor motion to allow the work surface platform 10 to move up and down. This example with the pivoting arms moving in the scissor

motion is the basis of the height adjustment mechanism 14. Base 12 is the base that the height adjustment mechanism 14 connects to. Base 12 consists of one piece of material or multiple pieces of material. FIG. 1 portrays base 12 as one piece, while FIG. 1B portrays base 12 as two pieces, and FIG. 1C portrays base 12 as one piece with portions removed.

[0039] Base 12 is connected to pivot point 26 and sliding mechanism 20. Sliding mechanisms 20 and 22 could also be directly connected to the arm(s) in the form of a slider or wheel, as portrayed in FIG 1C. The example in FIG 1 and 2 shows the present sliding mechanisms 20 and 22 as a groove cut through the wall of the supporting material. FIG. 1B and 2B show another design of the present sliding mechanisms 20 and 22 as channel or track. FIG 1C and 2C show yet another design of the present sliding mechanisms 20 and 22 as a rolling device such as a wheel or bearing. All three are methods to illustrate that there is more than one possible way to accomplish the intended sliding motion. Arm 16 attaches to the sliding mechanism 20 at point 32. Arm 16 moves back and forth along sliding mechanism 20 as part of the scissor motion used to obtain change in height of the work surface platform 10. The sliding action that sliding mechanisms 20 and 22 assist could be accomplished through means other than the illustrated examples, for example, a track system, roller wheel system, or some other means could be used to allow arm 16 and 18 to move in a back and forth motion. This disclosure is not intended to limit the means of the sliding motion, but to establish the fact that the sliding motion is part of the function of the adjustable height mechanism. The mentioned sliding motion is part of the overall scissor motion that is created by the design to vertically raise the work surface platform 10.

[0040] Pivot point 26 is the element that attaches the base 12 to arm 18. The examples in FIG. 1 and 2 shows pivot 26 as being part of the wall of the base, and FIG. 1B, 1C, 2B, and 2C shows pivot 26 as being a bracket or similar connected to base 12; pivot 26 could be located further in towards the center of base 12 and could be created as a stand-alone element such as a bracket or similar device. Pivot 26 is to be understood as a connection between base 12 and arm 18, and to be a pivot point that allows arm 18 to rotate as part of the scissor motion of height adjustment mechanism 14.

[0041] In some examples, the desktop workspace could exclude base 12, as shown in FIG. 1D. In such examples, height adjustment mechanism 14 connects directly to the desk or surface that the desktop workspace that adjusts vertically is sitting on. The lower portion of arm 18 connects

directly to the surface with a pivot point similar to element 26. The lower portion of arm 16 connects to the surface and be guided to slide in a similar motion with an independent sliding mechanism such as, but not limited to, a track, channel, wheel, rail, or slot.

[0042] FIG. 4 shows an example of part of height adjustment mechanism 14, which assists in the vertical motion achieved to move the work surface platform 10 up and down in a smooth motion. Height adjustment 14 is designed so that it creates a vertical motion without any lateral or protruding motion side to side. Said another way, the scissor motion that height adjustment 14 creates allows work surface platform 10 to stay in alignment with base 12 as it raises or lowers. This alignment is intended, however some examples could include a method that does not align element 10 and 12 as raised and lowered.

[0043] Height adjustment mechanism 14 consists of one or more pairs of pivot arms 16 & 18, which have a pivoting point 28 at some point along their axis. Height adjustment mechanism 14 could also include a design where arms 16 & 18 do not actually connect at pivot point 28, but still provide a similar motion. Arm 16 connects at pivot element 24, and at point 32 which slide along sliding element 20. Similarly, arm 18 connects at pivot element 26 and at pivot point 30, which slides along sliding element 22. Height adjustment mechanism 14 also includes components that make the disclosure more rigid, such as cross beam supports labeled as element 68 in FIG. 1C and 2C. Pivot arms, pivot points, and sliding elements are designed to fit compactly together when the desktop workspace is in a lowered position, as can be seen in FIG. 7,7B, and 10C. All elements align side-by-side in such a manner that when fully lowered the desktop workspace is very compact, looks sleek, and takes up minimal vertical space. The desktop workspace accomplishes such a compact state by having element 20 and 24 outside arm 16, which is outside arm 18, which is outside element 22. This arrangement of elements allows the elements' to not overlap when desktop workspace that adjusts vertically is in a fully lowered position providing a substantially compact state. The desktop workspace is not limited to specific elements or locations of elements to achieve the height adjustment motion that results in a compact design where elements do not overlap.

[0044] The illustrated examples of FIG 1 and 1B suggests that pivot points 26 and 24 are located in the back of desktop workspace, and that sliding mechanisms 20 and 22 are located in the front. The illustrated examples of FIG 1C suggests that pivot points 26 and 24 are located in the front of the desktop workspace and that sliding mechanisms 20 and 22 are located in the back. Some

examples include a design where the pivot points and sliding mechanisms are at opposite sides, or some combination of both.

[0045] As can be seen in FIG. 2, 2B, 2C, 4, 5B, and 5C pivoting arms, are attached to a cross beam 34. Cross beam 34 assists in stabilizing the invention and assist all elements of the height adjustment mechanism to move in concert when a force is applied. The force can be applied from various methods and on various points of cross beam 34, pivot arms 16 & 18, pivot elements 26 & 24, or sliding mechanisms 20 or 22. Some examples include a design where element 34 does not span across the mechanism connecting all or some of the arms.

[0046] FIG. 4 shows the force being applied by element 36 to cross beam 34. Element 36 can apply a pushing and pulling force to cross beam 36, which causes pivot arms 16 and 18 to move in a scissor motion. The example is intended to suggest that element 36, which applies force to height adjustment mechanism 14, can be a variety of different mechanisms, elements, or represent manual human force. For example, the force that element 36 provides could come from; a linear actuator, AC or DC motor, human force, gravity, springs, other objects with kinetic energy, or another source of force. For example, FIG. 4 illustrates element 36 as a linear actuator, while FIG. 5C illustrates element 36 as a pair of springs.

[0047] The combination of height adjustment mechanism 14 and a force represented by element 36, create the scissor motion that moves the work surface platform vertically up and down. Examples portrayed in FIG. 4, and 5 show the scissor motion of height adjustment mechanism 14.

[0048] Examples can utilize element 36 or similar element in a different location; for example, the element could attach directly to arms 16 or 18, or to one of the pivot points, instead of to element 34. Some examples may not include element 34 or the like, where such a crossbeam or connection is not deemed necessary. FIG. 4B is a perspective view of an example height adjustment mechanism as shown in FIG. 4, but without a cross beam 34. In FIG. 4B, elements 36 attach directly to arms 18 through arm pivot points 31, instead of to element 34.

[0049] Examples in FIG. 4, and 5 include arrows that show some of the possible motions of mechanism 14. Pivot arms are connected to one another at pivot point 28. As one end of arm 16 moves along sliding mechanism 20, the other end of the arm moves up or down vertically. When arm 18 pivots at point 26, the other end of the arm slides along sliding mechanism 22, which can be seen in FIG. 2, 2B, and 2C and moves up and down vertically.

[0050] The height adjustment mechanism moves vertically and is held or locked into position at various heights. Examples of the height adjustment mechanism use various methods to lock or hold in place. For example, element 36 acts as the locking device, or the locking device can be included in sliding mechanism(s) 20 & 22, or the locking device can be included in pivot point(s) 26 and 24, or the locking mechanism could entail another element not mentioned. FIG 5D portrays a locking device that could include element 34 or other element engaging with element 44. Pins or other element, portrayed as element 48, engage with teeth or other element, portrayed as element 46 to lock the height adjustment mechanism in a desired position. The locking element can include, but not limited to, a linear actuator, a motor, applied pressure, locking teeth, or some other method to prevent arms 16 and 18 from moving, so that work surface platform 10 does not change vertical height. Applications utilizing a linear actuator or similar can allow the operator to adjust the height without the limitations of preset heights that some locking mechanisms only provide. Instead of preset heights created by an element with features such as preset holes, the linear actuator or something similar would allow the operator to set the height limit by stopping the linear actuator or similar at any point the operator chooses. The desktop workspace includes a locking mechanism that maintains the vertical position of surface 10; the examples are not limited to specific elements to achieve the height locking function.

[0051] Examples include a means to unlock the device so that the work surface platform 10 can change height. Examples can include, but not limited to, a button(s) to control a motor or the like, a handle that the user pulls on to unlock the device, or another device that unlocks the locking device. FIG. 5D portrays an example of a locking mechanism where element 44 acts as a handle that once pressure is applied to can both lock and unlock the height adjustment mechanism by engaging or disengaging the teeth, element 46 or similar to pin, element 48 or similar. Unlocking elements are suggested, however, examples are not limited to specific elements to achieve the unlocking function.

[0052] The example shows sliding element(s) 22 and pivot element(s) 24 connect the height adjustment mechanism 14 to the work surface platform 10. The example allows for the work surface platform to be raised and lowered, as well as locked into the desired position of the individual using the desktop workspace. This allows the user to utilize the desktop workspace that adjusts vertically while in a seated position or a standing position.

[0053] FIG. 8 portrays the current design of elements 40 and 42, which could be used to elevate a monitor, laptop, or other items to a level higher than that of work surface platform 10. Additionally raising a monitor can create a more comfortable and healthier work space for the operator by bringing their screen(s) to a position closer to eye level. FIG. 9 shows elements 40 and 42 sitting on work surface platform 10. Elements 40 and 42 are presently designed to be able to sit anywhere on surface 10. Examples are not intended to limit the design of elements 40 and 42. Elements 40 and 42 are intended to represent a method in which a monitor(s) can be elevated to height higher than if it were sitting on work surface platform 10. It is to be understood that element 40 or 42 could be designed differently and still accomplish its function to raise the height of a monitor(s) or other items.

[0054] FIG. 10, and 10B show an example of part of keyboard tray mechanism 50, which provides a platform for the user to place items such as a keyboard, mouse, or other items on. Keyboard mechanism 50 is configured move to a position that is in an outward and lowered position with respect to surface 10. Such a position can provide a more ergonomic location of the keyboard and mouse for the user. Some examples include a design where the keyboard tray can be removed, adjusted, or designed so that it extends out when is in use and is compactly stored under surface 10 when not in use.

[0055] FIG. 10 and 10C show an example of Keyboard tray 50 where it is configured to move underneath and flush with surface 10 to allow this disclosure to maintain its compact state once in a closed position. Bracket 52 connects to channel plate component 54, which connects to bracket 56, which connect to slider 58, which connect to keyboard platform 60. When the user applies an inward and upward force to platform 60, channeled plate component 54 and slider 58 allow the keyboard tray mechanism to move to a position that is compactly positioned underneath platform 10 as portrayed in FIG. 10C. Conversely, when an outward and downward force is applied to platform 10, elements 52, 54, 56, and 58 allow mechanism 50 to be in an out and down position as portrayed in FIG. 1C and 2C. Said more specifically, plate 54 contains channels or grooves that guide brackets 52 and 54 connect to with pins, screws, or similar. When the user pulls or pushes up, down, in, or out on the platform 60, the channels or grooves in plate 54 along with the sliding motion of slider 58 guide the platform to either rest in an outward state for typing or tucked away under the work surface platform 10.

[0056] Figure 10B shows an example of keyboard tray mechanism 50 that attach to platform 10. Bracket 62 attaches to platform 10 at element 64 and keyboard platform 60 at element 66. Element 64 and 66 consists of a channel, bracket, or other means to attach bracket 62 to both platform 10 and platform 60.

[0057] Elements for keyboard tray mechanism 50 are suggested, however, examples are not limited to specific elements to achieve the function of the keyboard tray mechanism.

[0058] The intention of the different examples discussed is not intended to limit the scope of this disclosure. The description and terminology is not intended to limit the scope and applicability of this disclosure. It should be understood that other terminology, parts, components, and layouts could be used that would still embody the intentions of this disclosure. Individuals skilled in the art will recognize that examples described have suitable alternatives. It is also noted that the examples are not limited to specific construction materials, and that various suitable materials exist for the elements of this disclosure.

Doc Code: TRACK1.REQ
Document Description: TrackOne Request

PTO/SB/424 (12-11)

CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION UNDER 37 CFR 1.102(e) (Page 1 of 1)

First Named Inventor:	Nathan Mark Poniatowski	Nonprovisional Application Number (if known):	
Title of Invention:	DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i), the prioritized examination fee set forth in 37 CFR 1.17(c), and if not already paid, the publication fee set forth in 37 CFR 1.18(d) have been filed with the request. The basic filing fee, search fee, examination fee, and any required excess claims and application size fees are filed with the request or have been already been paid.

2. The application contains or is amended to contain no more than four independent claims and no more than thirty total claims, and no multiple dependent claims.

3. The applicable box is checked below:

I. ☑ Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)

i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.

---OR---

(b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.

ii. An executed oath or declaration under 37 CFR 1.63 is filed with the application.

II. ☐ Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)

i. A request for continued examination has been filed with, or prior to, this form.
ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature /Daniel T. Lund/	Date November 10, 2022
Name (Print/Typed) Daniel T. Lund	Practitioner Registration Number 58614

Note: *Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required in accordance with 37 CFR 1.33 and 11.18. Please see 37 CFR 1.4(d) for the form of the signature. If necessary, submit multiple forms for more than one signature, see below*.*

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PTO/AIA/82A (07-13)
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Application Number	TBD
Filing Date	10-Nov-2022
First Named Inventor	Nathan Mark Poniatowski
Title	DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	1001-001US16

SIGNATURE of Applicant or Patent Practitioner

Signature	/Daniel T. Lund/	Date (Optional)	10-Nov-2022
Name	Daniel T. Lund	Registration Number	58,614
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

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Patents

Bed or working surface of variable height using scissor jack with air spring of constant force but adjustable moment to match load weight

Abstract

The scissor jack is activated by the adjustable spring (15), preferably an air spring. The force exerted to raise a load is varied by moving the foot of the spring along a track (16) using the adjuster (17). The table is locked at the required height by a locking jack (18) or a lock integral with the spring (15).

Classifications

A47B9/16 Tables with tops of variable height with means for, or adapted for, inclining the legs of the table for varying the height of the top, e.g. with adjustable cross legs

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NL1011051C2

Netherlands

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Other languages: Dutch

Inventor: Cornelis Jacobus Van Klaveren

Worldwide applications

1999 NL

Application NL1011051A events

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2000-07-19 Application granted

2000-07-19 Publication of NL1011051C2

Info: Patent citations (4), Cited by (2), Legal events, Similar documents, Priority and Related Applications

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Claims (13)

Hide Dependent translated from Dutch

1. Method for height adjustment of a support frame, comprising the steps: A) setting the effective spring pressure of at least one adjusting spring depending on the load of the support frame, B) deactivating the height locking of the support frame, C) changing the height of the support frame, D) activating the height locking of the support frame, and E) repeating steps B) to D) until a changed load of the support frame resets the spring pressure of needs at least one adjusting spring according to step A). 2. Method as claimed in claim 1, wherein the effective spring pressure according to step A) is adjusted such that a substantially equilibrium situation arises between the gravity acting on the support frame and the adjusting force exerted by the at least one adjusting spring. A method according to claim 1 or 2, wherein the height of the supporting frame according to step C) is changed manually. 20 A method according to any one of the preceding claims, wherein the height of the support frame according to step C) is changed by changing the position of at least one scissor mechanism forming part of the support frame. A method according to any one of the preceding claims, wherein the adjustment of the effective spring pressure of at least one adjusting spring according to step A) is effected by changing at least one engaging position of the adjusting spring on the supporting frame. 6. A method according to any one of the preceding claims, wherein the adjustment of the effective spring pressure of at least one adjusting spring according to step A) takes place by changing the spring constant of the adjusting spring. 1 I I u: I -9- 7. Height-adjustable device comprising a carrying frame provided with a scissor mechanism with locking means for locking the scissor mechanism in different positions, the device also comprising at least one adjusting spring engaging the scissor mechanism with an adjustable effective spring pressure. Height-adjustable device according to claim 7, wherein the adjusting spring is provided with adjusting means for changing the spring constant. Height adjustable device according to claim 7 or 8, wherein at least one engagement position of the adjusting spring on the scissor mechanism is adjustable. The height-adjustable device according to any one of claims 7-9, wherein at least one adjusting spring is lockable. 15 The height adjustable device according to any one of claims 7-10, wherein the adjusting spring is a gas spring. 12. Height-adjustable device according to any one of claims 7-11, wherein the device comprises operating means for adjusting the effective spring pressure of the adjusting spring and for activating and deactivating the locking means. Height-adjustable device according to any one of claims 7-12, wherein the blocking means comprise at least one clampable spring. 1011051

Description

translated from Dutch

Method for height adjustment of a support frame and height-adjustable device

The invention relates to a method for height adjustment of a support frame. The invention also relates to a height-adjustable device comprising a support frame provided with a scissor mechanism with locking means for locking the scissor mechanism in different positions.

Many solutions are known for adjusting objects in height, such as, for example, tables, beds, tools, etc. Frequently used constructions comprise one or more telescopic legs, the length of which is adjustable using, for example, a screw spindle or timing belt. Scissor mechanisms are also known. A drawback of the existing height-adjusting means is that they usually have a very limited control range. In addition, a considerable force is required for adjustment so that they are provided with transmissions (think for example of a control wheel or crank) or drive means (electric motor, etc.). The height adjustment is therefore laborious and time consuming or the height adjustment means are expensive.

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The object of the present invention is to provide a method and device for the height adjustment of a support frame with which a relatively large control range can be combined with a substantially powerless operation.

The invention provides for this purpose a method for height adjustment of a supporting frame, comprising the steps: A) setting the effective spring pressure of at least one adjusting spring depending on the load of the supporting frame, B) deactivating the height locking of the supporting frame , C) changing the height of the support frame, D) activating the height locking of the support frame, and E) repeating steps B) to D) until a changed load on the support frame is reset. of the spring pressure of at least one adjusting spring in accordance with step A). Preferably, the effective spring pressure according to step A) is adjusted such that a substantially equilibrium situation arises between the gravity acting on the supporting frame and the adjusting force exerted by the 101 10 51 -2- at least one adjusting spring. By setting the effective spring pressure, depending on the load on the support frame, it is possible to vary the force required to change the height of the support frame and to adjust it to match the user's wishes. In addition, the force required for adjustment is no longer dependent on the load on the support frame; even a heavily loaded support frame can be adjusted in height with little force using this method. Operating means in the form of a transmission or separate drive means can thus also be made superfluous. In the preferred situation that there is a balance between the gravity acting on the support frame 10 and the adjusting force exerted by the adjusting spring, it is even possible with a very limited force (ideally only the force required to overcome the inertia) of the height of the support frame to change. After unlocking the carrying frame, it is then sufficient to engage the carrying frame, or an element coupled thereto, and to exert a limited force thereon in the direction of the desired height change. Height adjustment is therefore very simple and can also be implemented by people who have only limited physical strength (elderly, disabled). Even for such persons it is possible according to a preferred embodiment of the method to carry out a height change of the carrying frame manually or with the aid of another body part.

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In another preferred embodiment of the method, the height of the support frame according to step C) is changed by changing the position of at least one scissor mechanism forming part of the support frame. The use of a scissor mechanism has the important advantage that the control range is relatively large compared to the length of the spring (s) used. With a limited construction height of a support frame in the lowest position, it is still possible to realize a high extreme position.

In yet another preferred application of the method, the adjustment of the effective spring pressure of at least one adjusting spring according to step A) takes place by changing at least one engaging position of the adjusting spring on the supporting frame. It is also possible to set the effective spring pressure of at least one adjusting spring according to step A) by changing the spring constant of the adjusting spring. This means that the spring itself can be adjustable; an example of this is an adjustable gas spring. By varying the gripping position or the gripping direction of the spring force, the effective spring force can also be changed without the spring constant having to be changeable.

The invention also provides a height-adjustable device comprising a supporting frame provided with a scissor mechanism with locking means for locking the scissor mechanism in different positions, the device 10 also comprising at least one adjusting spring engaging the scissor mechanism with an adjustable effective spring pressure. The adjusting spring is preferably provided with adjusting means for changing the spring constant and / or at least one engagement position of the adjusting spring or the scissor mechanism is adjustable. Such a device is simple in construction, can be equipped with cheaper springs and can be provided with a large control range. For example, it appears possible to manufacture a substructure for a table, with which the working height of the table is variable between, for example, 0.68 m and 1.28 m. Such a large control range provides many possibilities of use. Examples are tables that can be used for sitting, but which can also be converted to a standing table and are therefore very desirable in so-called "call centers". Other examples are: 20 hospital beds, roller conveyors, packing and other work tables, loading bridges, etc.

In another preferred embodiment of the device, at least one adjusting spring is lockable. The locking means are thus integrated with the adjusting spring and separate locking means have become superfluous. This simplifies the arrangement. Good results are obtained when the adjusting spring is formed by a gas spring. Gas springs have the advantage that the spring constant remains substantially unchanged over a large part of their stroke length. This is particularly desirable because a certain set spring pressure in a preferred situation is always the same, regardless of the actual height of the device.

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For simple operation of the device, it is provided with operating means for setting the effective spring pressure of the adjusting spring and for activating and deactivating the locking means.

In yet another preferred embodiment the blocking means of the height-adjustable device comprise at least one blockable spring. Lockable springs are widely available and the combination of the two functions in one element makes the device easy to construct. In addition, the height-adjustable device can be made compact, so that a user of the device is at least hindered by the adjusting mechanism.

The present invention will be further elucidated on the basis of the non-limitative exemplary embodiments shown in the following figures. Herein: figure 1 shows a side view of a device according to the invention in a low-set position, figure 2 a side view of the device shown in figure 1 in a high-set position, and figure 3 a perspective view of a work table provided with a height-adjustable device according to the invention.

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Figure 1 shows a side view of a supporting frame 1. The supporting frame 1 comprises two scissor arms 2, 3 which are pivotally connected to each other in a rotation point 4. The scissor arms 2, 3 rotatably engage on a lower beam 5 and at rotation points 6, 7, respectively. The rotation point 7 is not in a fixed position relative to the lower beam 5, but a support arm 8 of the rotation point 7 is slidable in a guide 9 which is assembled with the lower beam 5. In a similar manner, the scissor arms 2, 3 to an upper beam 10 in rotation points 11, 12 respectively. The rotation point 12 is movable relative to the upper beam 10 in that a support arm 13 of the rotation point 12 is movable in a guide 14 which is assembled with the upper beam 10.

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An adjusting spring 15 is placed between the scissor arms 2, 3, which pivots engages on the arms 2,3. in order to vary the force exerted by the adjusting spring 15 on the arms 2, 3, depending on the load on the upper beam 10, it is possible in this embodiment to change the engaging position of the adjusting spring 15 on the scissor arm 3. A guide 16 is arranged on the scissor arm 3 for the desired change of position of the adjusting spring 15 relative to the arm 3. The engaging position of the spring 15 on the arm 3 can be adjusted discreetly or continuously by means of a rotary knob 17. The effective spring force exerted by the adjusting spring 15 on the arms 2, 3 will increase as the engagement position of the spring 15 on the arm 3 increases with respect to the rotation point 10 of the arms 2, 3. With increasing load on the top beam 10, the adjusting spring 15 will thus be moved to a more vertical position, while with decreasing load on the top beam 10 the spring 15 will be moved to a more horizontal position. For a simple adjustment of the engaging position of the spring 15 on the arm 3, it is also possible to replace the rotary knob 17 with a transfer mechanism, so that the engaging position can be changed near the upper beam 10.

The double-bent shape of the two scissor arms 2, 3 has the advantage that such an engagement of the spring 15 on the arms 2, 3 is possible that the adjusting spring 15 still exerts an effective spring force even in a low position of the support frame 1. Thus, there is no "dead" position where the force exerted by the spring 15 passes

through the rotation point 4.

This figure also shows a blockable spring 18, the operation of which will be further elucidated with reference to Figure 2.

Figure 2 shows the support frame 1 of Figure 1 on which a blade 19 is fixed and with a changed position of the support frame 1. It is clearly visible that the distance between the lower beam 5 and the upper beam 10 has increased compared to the figure 1 30 displayed mode. Moving the beams 5, 10 apart requires little force because the adjusting spring 15 supplies at least a significant part of the force required for this.

Also clearly visible in this figure is that the position of the rotation points 7, 12 at 1011031-5 relative to beams 5, 10 has been changed. The supporting arms 8,13 have moved to the right in respective guides 9,14 when the arms 2, 3 in this figure move apart.

The lockable spring 18 must be activated to fix the support frame 1 in a particular condition. Likewise, for mutual displacement of the scissor arms 2, 3, the blockable spring 18 must be deactivated. An operating handle 20 is provided for this purpose.

The table 21 shown in figure 3 is provided with two co-operating scissor arms, 22, 23 and 24, 25 respectively. Adjusting springs 26, 27 engage in fixed positions on scissor arms 22, 23 and 24, 25 respectively. the effective force exerted by the adjusting springs 26, 27 on the scissor arms 22, 23, 24, 25, the adjusting springs 26, 27 are provided with adjusting means 28, 29. The adjustment of the delivered effective spring force is therefore not effected by changing the engaging position of the adjusting springs 26, 27 but by changing the spring constant of the springs 26, 27. it is also possible to move the adjusting means 28, 29 to the edge of a table top 30, so that the operation is relatively simple. An example of an alternative of the adjustability of the adjusting springs 26, 27 is, for example, that it takes place automatically by means of a built-in balancing mechanism (also to be used for changing the engagement position of springs 26, 27 on scissor arms 23-25), but it is It is also possible to automate the adjustment of the adjusting springs 26, 27 and make it dependent on loads detected by sensors. Many structures are conceivable for those skilled in the art to adjust the effectively delivered resilience.

Attention is also drawn to the arrangement of a blocking spring 31, which has been modified relative to Figures 1, 2, which is pivotally connected to scissors arm 22, at least an extended part 32 of the scissors arm 22, and a fixed position on the table top 30. For activation / deactivation of the blocking spring 31, a push button 33 is provided which is attached to the edge of the table top 30.

1 0 1 1 8 0 1 -7-

The table 21 shown in this figure is particularly suitable for use in call centers and the table top 30 has the shape of a truncated triangle, which makes it possible to arrange the table 21 in combination with similar tables 21 in, for example, a circle segment shape or in a line with alternately placed workplaces.

An additional advantage of the table 21 is that the non-parallel arrangement of the scissor arms 22-25 provides the table with extra stability.

Although the invention has been elucidated on the basis of only a few exemplary embodiments, it will be apparent to everyone that the invention is in no way limited to the exemplary embodiments described and shown. On the contrary, many variations are still possible for the skilled person within the scope of the invention.

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Patent Citations (4)

Publication number	Priority date	Publication date	Assignee	Title
US5588377A *	1995-04-25	1996-12-31	Fleetwood Enterprises, Inc.	Convertible table configurable between expanded and compressed positions
US5632209A *	1993-09-02	1997-05-27	Bisharnon Industries Corporation	Lift table
WO1997038604A1 *	1996-04-18	1997-10-23	Hon Technology Inc.	Adjustable height load bearing support structure
WO1998016134A1 *	1996-10-11	1998-04-23	Hon Technology, Inc.	Adjustable height load bearing support structure
Family To Family Citations				

* Cited by examiner, † Cited by third party

Cited By (2)

Publication number	Priority date	Publication date	Assignee	Title
ITUD20100063A1 *	2010-04-07	2011-10-08	F & F S R L	ADJUSTABLE TABLE IN HEIGHT
CN108024625A *	2015-09-24	2018-05-11	爱格升公司	height-adjustable device
Family To Family Citations				

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
US7185377B2	2007-03-06	Height adjustable bed and automatic leg stabilizer system therefor
US7347410B2	2008-03-25	Lifting apparatus

US5374102A	1994-12-20	Chair assembly for vehicle
US5165129A	1992-11-24	Adjustable bed frame with inclined guide and drive elements
US5647602A	1997-07-15	Hemi-wheeled walker
US6839918B1	2005-01-11	Collapsible wheel chair with displaceable seat panels
JP2005517614A	2005-06-16	Lifting mechanism and medical equipment incorporating the lifting mechanism
US5402543A	1995-04-04	Patient support apparatus including stabilizing mechanism
US20150028643A1	2015-01-29	Universal Chair Lift Apparatus
CA2488552A1	2005-06-08	Adjustable musical instrument stand
CA2418491C	2006-05-09	A wheelchair seat having adjustable telescoping assembly
US6332232B1	2001-12-25	Portable easy lifting device
NL1011051C2	2000-07-19	Bed or working surface of variable height using scissor jack with air spring of constant force but adjustable moment to match load weight
US20100096900A1	2010-04-22	Lever and wheel attachment device for chairs
US3314384A	1967-04-18	Over-bed table
US20050087957A1	2005-04-28	Riser seat and wheelchairs with same
NL1024909C2	2005-06-02	Device and method for moving people from a sitting to a standing position.
AU2004235713A1	2004-11-18	Calf rest for patient chair
US7931288B1	2011-04-26	Medical wheelchair whose seat having a height adjustable function
FI74396C	1988-02-08	REGLERBAR BAEDD ELLER STOL.
CA2093072C	2003-05-06	Chair assembly for vehicle
EP3650000A1	2020-05-13	Apparatus for lifting people associable with the seat of a chair or an armchair
EP3354160B1	2019-10-16	Height-adjustable platform
NL2005387C2	2012-03-26	TOOLS TO BE ADDED TO A WHEELCHAIR WITH OPTABLE AID, A WHEELCHAIR INTEGRATED WITH SUCH AUXILIARY DEVICE AND A METHOD OF MANUFACTURING IT.
WO2021191787A1	2021-09-30	Table assembly with reversible leg assemblies

Priority And Related Applications

Priority Applications (2)

Application	Priority date	Filing date	Title
NL1011051A	1999-01-18	1999-01-18	Bed or working surface of variable height using scissor jack with air spring of constant force but adjustable moment to match load weight
NL1011051		1999-01-18	

Applications Claiming Priority (1)

Application	Filing date	Title
NL1011051A	1999-01-18	Bed or working surface of variable height using scissor jack with air spring of constant force but adjustable moment to match load weight

Legal Events

Date	Code	Title	Description
2000-09-01	PD2B	A search report has been drawn up	
2012-08-15	V1	Lapsed because of non-payment of the annual fee	Effective date: 20120801

Concepts

machine-extracted

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gravity		claims,description	3	0.000

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(54) **Werkwijze voor hoogte-instelling van een draaggestel en hoogte instelbare inrichting.**

(57) De uitvinding heeft betrekking op een werkwijze voor hoogte-instelling van een draaggestel omvattende de stappen:
A) het instellen van de effectieve veerdruk van tenminste één stelveer afhankelijk van de belasting van het draaggestel,
B) het deactiveren van de hoogte vergrendeling van het draaggestel,
C) het wijzigen van de hoogte van het draaggestel,
D) het activeren van de hoogte vergrendeling van het draaggestel, en
E) het herhalen van de stappen B) tot en met D) totdat een gewijzigde belasting van het draaggestel een hernieuwde instelling van de veerdruk van ten minste één stelveer behoeft overeenkomstig stap A).
De uitvinding heeft tevens betrekking op een hoogte instelbare inrichting omvattende een draaggestel voorzien van een schaarmechanisme met vergrendelmiddelen voor het in verschillende standen vergrendelen van het schaarmechanisme, waarbij de inrichting tevens tenminste één op het schaarmechanisme aangrijpende stelveer omvat met een instelbare effectieve veerdruk.

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De inhoud van dit octrooi komt overeen met de oorspronkelijk ingediende beschrijving met conclusie(s) en eventuele tekeningen.

Werkwijze voor hoogte-instelling van een draaggestel en hoogte instelbare inrichting

De uitvinding heeft betrekking op een werkwijze voor hoogte-instelling van een draaggestel. De uitvinding heeft tevens betrekking op een hoogte instelbare inrichting omvattende een draaggestel voorzien van een schaarmechanisme met vergrendelmiddelen voor het in verschillende standen vergrendelen van het schaarmechanisme.

Voor het in hoogte instellen van objecten, zoals bijvoorbeeld, tafels, bedden, werktuigen etcetera, zijn er vele oplossingen bekend. Veel toegepaste constructies omvatten één of meerdere telescopische poten waarvan de lengte instelbaar is met behulp van bijvoorbeeld een schroefspindel of tandriem. Ook schaarmechanismen zijn bekend. Nadeel van de bestaande hoogte-instelmiddelen is dat zij doorgaans beschikken over een zeer beperkt regelbereik. Bovendien is een aanzienlijke kracht benodigd bij instelling zodat zij zijn voorzien van overbrengingen (denk hierbij bijvoorbeeld aan een bedieningswiel of slinger) of aandrijfmiddelen (elektromotor etcetera). De hoogte-instelling is hierdoor omslachtig en tijdrovend of de hoogte-instelmiddelen zijn kostbaar.

De onderhavige uitvinding heeft tot doel het verschaffen van een werkwijze en inrichting voor de hoogte-instelling van een draaggestel waarmee een relatief groot regelbereik gecombineerd kan worden met een in hoofdzaak krachtloze bediening.

De uitvinding verschaft daartoe een werkwijze voor hoogte-instelling van een draaggestel omvattende de stappen: A) het instellen van de effectieve veerdruk van ten minste één stelveer afhankelijk van de belasting van het draaggestel, B) het deactiveren van de hoogte vergrendeling van het draaggestel, C) het wijzigen van de hoogte van het draaggestel, D) het activeren van de hoogte vergrendeling van het draaggestel, en E) het herhalen van de stappen B) tot en met D) totdat een gewijzigde belasting van het draaggestel een hernieuwde instelling van de veerdruk van tenminste één stelveer behoeft overeenkomstig stap A). Bij voorkeur wordt de effectieve veerdruk overeenkomstig stap A) zodanig ingesteld dat er in hoofdzaak een evenwichtssituatie ontstaat tussen de op het draaggestel aangrijpende zwaartekracht en de door de

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tenminste ene stelveer uitgeoefende stelkracht. Door de instelling van de effectieve veerdruk, afhankelijk van de belasting van het draaggestel, is het mogelijk om de benodigde kracht voor het wijzigen van de hoogte van het draaggestel te variëren en zo in te stellen dat deze overeenkomt met de wens van de betreffende gebruiker. Tevens is de benodigde kracht voor instelling niet meer afhankelijk van de belasting van het draaggestel; zelfs een zwaar belast draaggestel is met behulp van deze werkwijze met geringe kracht in hoogte in te stellen. Zo kunnen tevens bedieningsmiddelen in de vorm van een overbrenging of aparte aandrijfmiddelen overbodig gemaakt worden. In de voorkeurssituatie dat er een evenwicht ontstaat tussen de op het draaggestel aangrijpende zwaartekracht en de door de stelveer uitgeoefende stelkracht is het zelfs mogelijk met een zeer beperkte kracht (ideaaltypisch slechts de kracht benodigd voor het overwinnen van de massatraagheid) de hoogte van het draaggestel te wijzigen. Na het ontgrendelen van het draaggestel is het dan voldoende het draaggestel, of een daarmee gekoppeld element, aan te grijpen en daar een beperkte kracht op uit te oefenen in de richting van de gewenste hoogte wijziging. Hoogte wijziging is aldus zeer eenvoudig en ook door te voeren de mensen die slechts over beperkte lichaamskracht beschikken (ouderen, gehandicapten). Zelfs voor dergelijke personen is het mogelijk volgens een voorkeursuitvoering van de werkwijze een hoogte wijziging van het draaggestel handmatig of met behulp van een ander lichaamsdeel uit te voeren.

In een andere voorkeursuitvoering van de werkwijze vindt de wijziging van de hoogte van het draaggestel volgens stap C) plaats door het wijzigen van de stand van ten minste één van het draaggestel deel uitmakend schaarmechanisme. Het gebruik van een schaarmechanisme heeft als belangrijk voordeel dat het regelbereik relatief groot is ten opzicht van de lengte van de toegepaste veer(veren). Met een beperkte bouwhoogte van een draaggestel in laagste stand is het toch mogelijk een hoge uiterste stand te realiseren.

In weer een andere voorkeurstoepassing van de werkwijze vindt het instellen van de effectieve veerdruk van ten minste één stelveer volgens stap A) plaats door wijziging van ten minste één aangrijppositie van de stelveer op het draaggestel. Ook is het mogelijk het instellen van de effectieve veerdruk van tenminste één stelveer volgens

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stap A) plaats te laten vinden door wijziging van de veerconstante van de stelveer. Dit wil zeggen dat de veer zelf instelbaar kan zijn; een voorbeeld hiervan is een regelbare gasveer. Door het variëren van de aangrijppositie of de aangrijprichting van de veerkracht kan de effectieve veerkracht evenzeer worden gewijzigd zonder dat de veerconstant wijzigbaar dient te zijn.

De uitvinding verschaft tevens een hoogte instelbare inrichting omvattende een draaggestel voorzien van een schaarmechanisme met vergrendelmiddelen voor het in verschillende standen vergrendelen van het schaarmechanisme, waarbij de inrichting tevens tenminste één op het schaarmechanisme aangrijpende stelveer omvat met een instelbare effectieve veerdruk. Bij voorkeur is de stelveer voorzien van instelmiddelen voor het wijzigen van de veerconstante en/of is tenminste één aangrijppositie van de stelveer of het schaarmechanisme instelbaar. Een dergelijke inrichting is eenvoudig van opbouw, kan met goedkopere veren worden uitgerust en kan van een groot regelbereik zijn voorzien. Zo blijkt het mogelijk een onderbouw voor een tafel te vervaardigen waarmee de werkhoogte van de tafel variabel is tussen bijvoorbeeld 0,68 m en 1,28 m. Een zo groot regelbereik verschaft vele gebruiksmogelijkheden. Voorbeelden hiervan zijn tafels waaraan gezeten kan worden maar die ook omstelbaar zijn naar sta-tafel en daardoor zeer gewenst zijn in zo geheten "call-centers". Andere voorbeelden zijn: ziekenhuisbedden, rollenbanen, pak- en andere werktafels, laadbruggen etcetera.

In een andere voorkeursuitvoering van de inrichting is tenminste één stelveer blokkeerbaar. Aldus zijn de vergrendelmiddelen geïntegreerd met de stelveer en zijn afzonderlijke vergrendelmiddelen overbodig geworden. Dit vereenvoudigt de inrichting. Goede resultaten worden verkregen wanneer de stelveer wordt gevormd door een gasveer. Gasveren hebben het voordeel dat de veerconstante over een groot deel van hun slaglengte in hoofdzaak ongewijzigd blijft. Dit is bijzonder gewenst omdat een bepaalde ingestelde veerdruk in een voorkeurssituatie altijd hetzelfde is, onafhankelijk van de actuele hoogte van de inrichting.

Voor een eenvoudige bediening van de inrichting is deze voorzien van bedieningsmiddelen voor het instellen van de effectieve veerdruk van de stelveer en voor het activeren en deactiveren van de vergrendelmiddelen.

In weer een andere voorkeursuitvoering omvatten de blokkeermiddelen van de hoogte instelbare inrichting tenminste een blokkeerbare veer. Blokkeerbare veren zijn algemeen verkrijgbaar en door combinatie van de twee functies in één element kan de inrichting eenvoudig worden geconstrueerd. Bovendien kan de hoogte instelbare inrichting compact worden uitgevoerd waardoor een gebruiker van de inrichting minimaal wordt gehinderd door het instelmechanisme.

De onderhavige uitvinding zal verder worden verduidelijkt aan de hand van de in de navolgende figuren weergegeven niet-limitatieve uitvoeringsvoorbeelden. Hierin toont:
figuur 1 een zijaanzicht op een inrichting overeenkomstig de uitvinding in een op lage hoogte ingestelde toestand,
figuur 2 een zijaanzicht op de inrichting getoond in figuur 1 in een hoge ingestelde toestand, en
figuur 3 een perspectivisch aanzicht op een werktafel voorzien van een hoogte instelbare inrichting overeenkomstig de uitvinding.

Figuur 1 toont een zijaanzicht op een draaggestel 1. Het draaggestel 1 omvat twee schaararmen 2, 3 die zwenkbaar met elkaar zijn verbonden in een rotatiepunt 4. De schaararmen 2, 3 grijpen roteerbaar aan op een onderste ligger 5 respectievelijk bij rotatiepunten 6, 7. Het rotatiepunt 7 bevindt zich niet op een gefixeerde positie ten opzichte van de onderste ligger 5 maar een draagarm 8 van het rotatiepunt 7 is verschuifbaar in een geleiding 9 welke is samengebouwd met de onderste ligger 5. Op soortgelijke wijze grijpen de schaararmen 2, 3 aan op een bovenste ligger 10 in respectievelijk rotatiepunten 11, 12. Het rotatiepunt 12 is verplaatsbaar ten opzichte van de bovenste ligger 10 doordat een draagarm 13 van het rotatiepunt 12 verplaatsbaar is in een geleiding 14 welke is samengebouwd met de bovenste ligger 10.

Tussen de schaararmen 2, 3 is een stelveer 15 geplaatst welke zwenkbaar aangrijpt op de armen 2, 3. Voor het variëren van de door de stelveer 15 op de armen 2, 3 uitgeoefende kracht, afhankelijk van de belasting van de bovenste ligger 10, is het in deze uitvoering mogelijk de aangrijppositie van de stelveer 15 op schaararm 3 te wijzigen. Op de schaararm 3 is een geleiding 16 aangebracht voor de gewenste positieverandering van de stelveer 15 ten opzichte van de arm 3. De aangrijppositie van de veer 15 op de arm 3 is discreet of continue instelbaar middels een draaiknop 17. De effectieve veerkracht uitgeoefend door de stelveer 15 op de armen 2, 3 zal toenemen wanneer de aangrijppositie van de veer 15 op de arm 3 ten opzichte van het rotatiepunt 4 van de armen 2, 3 toeneemt. Bij toenemende belasting van de bovenste ligger 10 zal aldus de stelveer 15 naar een meer verticale stand worden verplaatst terwijl bij afnemende belasting van de bovenste ligger 10 de veer 15 naar een meer horizontale stand zal worden verplaatst. Voor een eenvoudige instelling van de aangrijppositie van de veer 15 op de arm 3 is het ook mogelijk de draaiknop 17 te vervangen door een overbrengmechanisme zodat de aangrijppositie wijzigbaar is nabij de bovenste ligger 10.

De dubbelgeknikte vorm van de beide schaararmen 2, 3 heeft als voordeel dat een zodanig aangrijping van de veer 15 op de armen 2, 3 mogelijk is dat de stelveer 15 zelfs in een laagstand van het draaggestel 1 nog steeds een effectieve veerkracht uitoefent. Er is dus geen "dode" positie waarbij de door de veer 15 uitgeoefende kracht door het rotatiepunt 4 voert.

In deze figuur is tevens een blokkeerbare veer 18 weergegeven waarvan de werking nader zal worden verduidelijkt aan de hand van figuur 2.

Figuur 2 toont het draaggestel 1 uit figuur 1 waarop een blad 19 is bevestigd en met een gewijzigde positie van het draaggestel 1. Duidelijk zichtbaar is dat de afstand tussen de onderste ligger 5 en de bovenste ligger 10 is toegenomen ten opzichte van de in figuur 1 weergegeven stand. Het uiteen bewegen van de liggers 5, 10 kost weinig kracht omdat de stelveer 15 tenminste een belangrijk deel van de daartoe benodigde kracht levert. Ook duidelijk zichtbaar in deze figuur is dat de positie van de rotatiepunten 7, 12 ten

opzichte van respectievelijk liggers 5, 10 is gewijzigd. De draagarmen 8, 13 zijn bij het uiteen bewegen van de armen 2, 3 in deze figuur naar rechts bewogen in respectievelijke geleidingen 9, 14.

Voor het fixeren van het draaggestel 1 in een bepaalde toestand dient de blokkeerbare veer 18 geactiveerd te worden. Evenzo geldt dat voor onderlinge verplaatsing van de schaararmen 2, 3 de blokkeerbare veer 18 gedeactiveerd dient te worden. Daartoe is voorzien in een bedieningshendel 20.

De in figuur 3 getoonde tafel 21 is voorzien van een tweetal samenwerkende schaararmen, respectievelijk 22, 23 en 24, 25. Stelveren 26, 27 grijpen op vaste posities aan op respectievelijk schaararmen 22, 23 en 24, 25. Voor het instellen van de effectieve door de stelveren 26, 27 op de schaararmen 22, 23, 24, 25 uitgeoefende kracht zijn de stelveren 26, 27 voorzien van instelmiddelen 28, 29. De instelling van de geleverde effectieve veerkracht vindt nu dus niet plaats door het wijzigen van de aangrijppositie van de stelveren 26, 27 maar door wijziging van de veerconstante van de veren 26, 27. Ook is het mogelijk de instelmiddelen 28, 29 te verplaatsen naar de rand van een tafelblad 30 zodat de bediening relatief eenvoudig is. Een voorbeeld van een alternatief van de instelbaarheid van de stelveren 26, 27 is bijvoorbeeld dat deze automatisch plaatsvindt door een ingebouwd balansmechanisme (tevens te gebruiken voor het wijzigen van de aangrijppositie van veren 26, 27 op schaararmen 22-25), maar het is ook mogelijk de instelling van de stelveren 26, 27 te automatiseren en afhankelijk te maken van door sensoren waargenomen belastingen. Voor de deskundigen in het vakgebied zijn er vele constructies denkbaar voor het instellen van de effectief geleverde veerkracht.

Tevens wordt de aandacht gevestigd op de ten opzichte van de figuren 1, 2 gewijzigde opstelling van een blokkeerveer 31, deze is zwenkbaar verbonden met schaararm 22, althans een verlengd deel 32 van de schaararm 22, en een vaste positie op het tafelblad 30. Voor activering/deactivering van de blokkeerveer 31 is voorzien in een drukknop 33 die aan de rand van het tafelblad 30 is bevestigd.

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De in deze figuur weergegeven tafel 21 is bijzonder geschikt voor toepassing in call-centers en het tafelblad 30 heeft de vorm van een afgeknotte driehoek waardoor het mogelijk is de tafel 21 in combinatie met soortgelijke tafels 21 op te stellen in bijvoorbeeld cirkelsegmentvorm of in een lijn met om en om geplaatste werkplekken. Een bijkomend voordeel van de tafel 21 is dat de niet evenwijdige plaatsing van de schaararmen 22-25 de tafel extra stabiliteit verschaft.

Hoewel de uitvinding aan de hand van slechts enkele uitvoeringsvoorbeelden is toegelicht zal het een ieder duidelijk zijn dat de uitvinding geenszins tot de beschreven en getoonde uitvoeringsvoorbeelden is beperkt. Integendeel, binnen het kader van de uitvinding zijn voor de vakman nog vele variaties mogelijk.

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Conclusies

1. Werkwijze voor hoogte-instelling van een draaggestel omvattende de stappen:
A) het instellen van de effectieve veerdruk van tenminste één stelveer afhankelijk van de belasting van het draaggestel,
B) het deactiveren van de hoogte vergrendeling van het draaggestel,
C) het wijzigen van de hoogte van het draaggestel,
D) het activeren van de hoogte vergrendeling van het draaggestel, en
E) het herhalen van de stappen B) tot en met D) totdat een gewijzigde belasting van het draaggestel een hernieuwde instelling van de veerdruk van ten minste één stelveer behoeft overeenkomstig stap A).

2. Werkwijze volgens conclusie 1, waarbij de effectieve veerdruk overeenkomstig stap A) zodanig wordt ingesteld dat er in hoofdzaak een evenwichtssituatie ontstaat tussen de op het draaggestel aangrijpende zwaartekracht en de door de tenminste ene stelveer uitgeoefende stelkracht.

3. Werkwijze volgens conclusie 1 of 2, waarbij de wijziging van de hoogte van het draaggestel volgens stap C) handmatig plaatsvindt.

4. Werkwijze volgens één der voorgaande conclusies, waarbij de wijziging van de hoogte van het draaggestel volgens stap C) plaatsvindt door het wijzigen van de stand van tenminste één van het draaggestel deel uitmakend schaarmechanisme.

5. Werkwijze volgens één der voorgaande conclusies, waarbij het instellen van de effectieve veerdruk van tenminste één stelveer volgens stap A) plaatsvindt door wijziging van ten minste één aangrijppositie van de stelveer op het draaggestel.

6. Werkwijze volgens één der voorgaande conclusies, waarbij het instellen van de effectieve veerdruk van tenminste één stelveer volgens stap A) plaatsvindt door wijziging van de veerconstante van de stelveer.

7. Hoogte instelbare inrichting omvattende een draaggestel voorzien van een schaarmechanisme met vergrendelmiddelen voor het in verschillende standen vergrendelen van het schaarmechanisme, waarbij de inrichting tevens tenminste één op het schaarmechanisme aangrijpende stelveer omvat met een instelbare effectieve veerdruk.

8. Hoogte instelbare inrichting volgens conclusie 7 waarbij de stelveer is voorzien van instelmiddelen voor het wijzigen van de veerconstante.

9. Hoogte instelbare inrichting volgens conclusie 7 of 8, waarbij tenminste één aangrijppositie van de stelveer op het schaarmechanisme instelbaar is.

10. Hoogte instelbare inrichting volgens één der conclusies 7-9, waarbij ten minste één stelveer blokkeerbaar is.

11. Hoogte instelbare inrichting volgens één der conclusies 7-10, waarbij de stelveer een gasveer is.

12. Hoogte instelbare inrichting volgens één der conclusies 7-11, waarbij de inrichting bedieningsmiddelen omvat voor het instellen van de effectieve veerdruk van de stelveer en voor het activeren en deactiveren van de vergrendelmiddelen.

13. Hoogte instelbare inrichting volgens één der conclusies 7-12, waarbij de blokkeermiddelen tenminste een blokkeerbare veer omvatten.

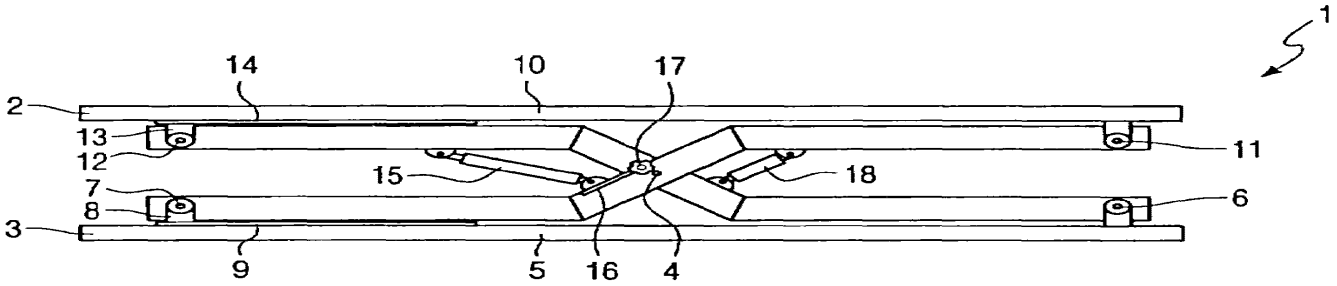


FIG. 1

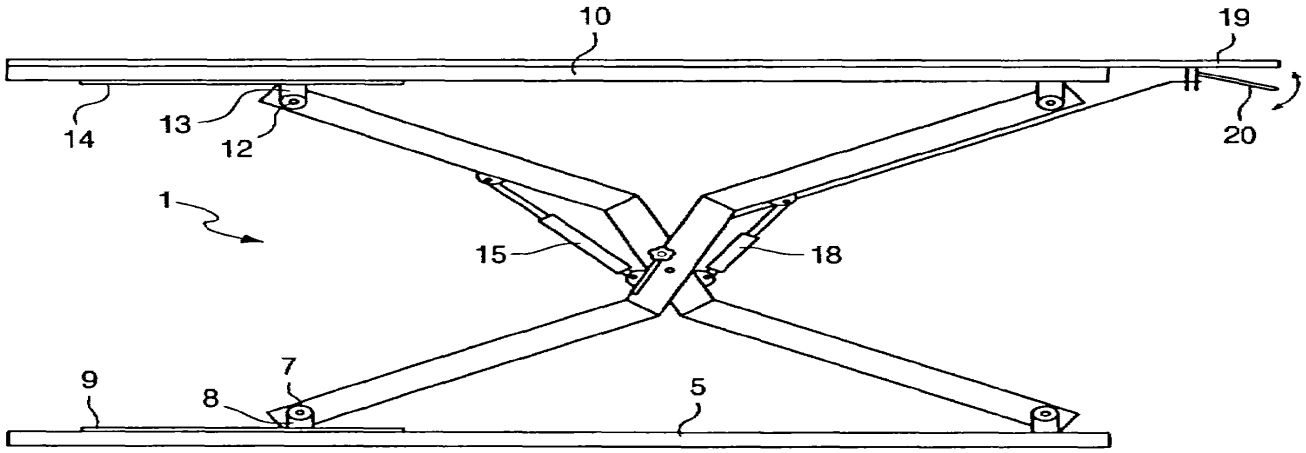


FIG. 2

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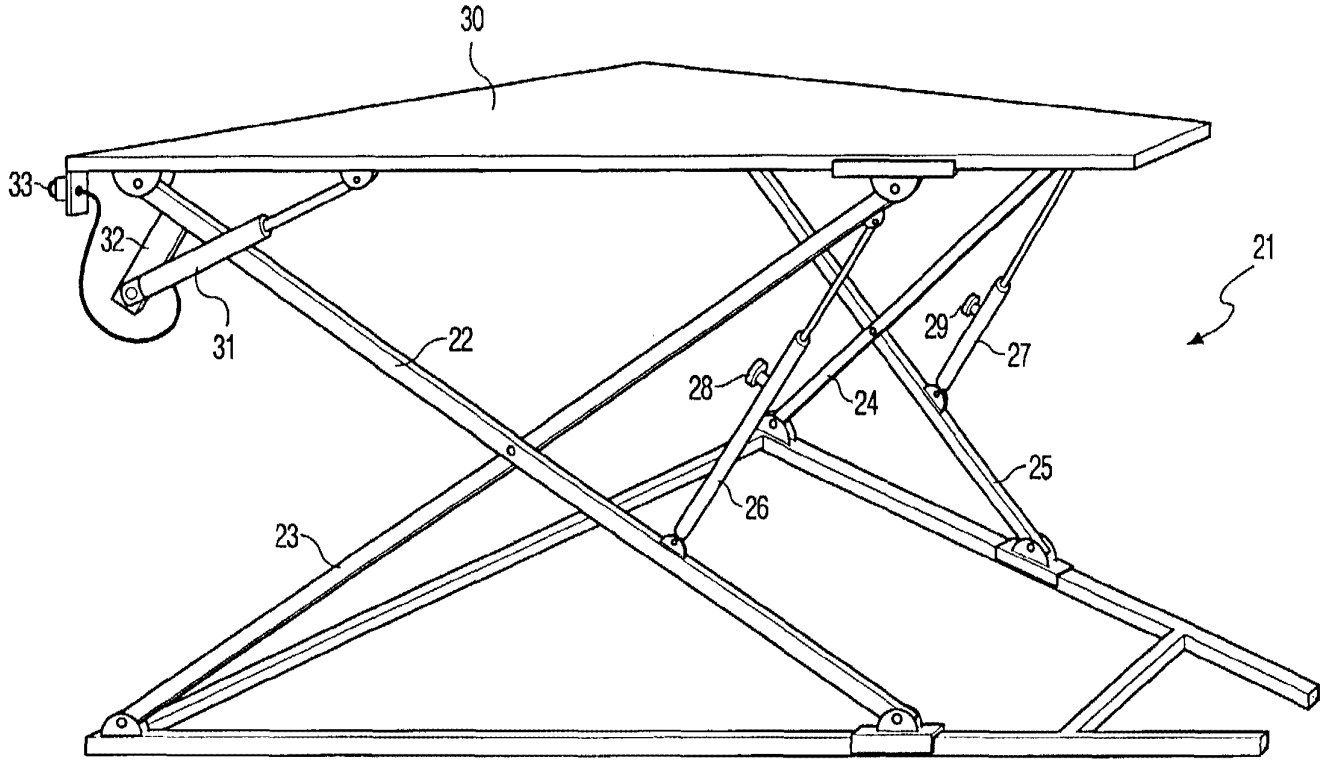


FIG. 3

SAMENWERKINGSVERDRAG (PCT)

RAPPORT BETREFFENDE
NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

IDENTIFIKATIE VAN DE NATIONALE AANVRAGE	Kenmerk van de aanvrager of van de gemachtigde
	98.2.1025 NL
Nederlandse aanvrage nr.	Indieningsdatum
1011051	18 januari 1999
	Ingeroepen voorrangsdatum
Aanvrager (Naam)	
UNISPACE A.G.	
Datum van het verzoek voor een onderzoek van internationaal type	Door de Instantie voor Internationaal Onderzoek (ISA) aan het verzoek voor een onderzoek van internationaal type toegekend nr.
	SN 32400 NL

I. CLASSIFICATIE VAN HET ONDERWERP (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven)

Volgens de Internationale classificatie (IPC)

Int.Cl.[6]: A 47 B 9/16, A 47 B 9/02

II. ONDERZOCHTE GEBIEDEN VAN DE TECHNIEK

Onderzochte minimum documentatie

Classificatiesysteem	Classificatiesymbolen
Int.Cl.[6]:	A 47 B

Onderzochte andere documentatie dan de minimum documentatie voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

III. ☐ GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES (opmerkingen op aanvullingsblad)

IV. ☐ GEBREK AAN EENHEID VAN UITVINDING (opmerkingen op aanvullingsblad)

16 Form PCT/ISA/201(a) 07.1979

VERSLAG VAN HET NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

Nummer van het verzoek om een nieuwheidsonderzoek
NL 1011051

A. CLASSIFICATIE VAN HET ONDERWERP
IPC 6 A47B9/16 A47B9/02

Volgens de Internationale Classificatie van octrooien (IPC) of zowel volgens de nationale classificatie als volgens de IPC.

B. ONDERZOCHTE GEBIEDEN VAN DE TECHNIEK

Onderzochte miminum documentatie (classificatie gevolgd door classificatiesymbolen)
IPC 6 A47B

Onderzochte andere documentatie dan de mimimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

Tijdens het internationaal nieuwheidsonderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerbaar, gebruikte trefwoorden)

C. VAN BELANG GEACHTE DOCUMENTEN

Categorie °	Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
X	WO 98 16134 A (HON INDUSTRIES) 23 April 1998 (1998-04-23) het gehele document	1-5,7,9
X	WO 97 38604 A (HON INDUSTRIES) 23 Oktober 1997 (1997-10-23) het gehele document	1,3,4
X	US 5 632 209 A (BISHAMON INDUSTRIES CORPORATION) 27 Mei 1997 (1997-05-27) het gehele document	1,3,4
A	US 5 588 377 A (FLEETWOOD ENTERPRISES INC.) 31 December 1996 (1996-12-31) het gehele document	1,7-13

☐ Verdere documenten worden vermeld in het vervolg van vak C.

☒ Leden van dezelfde octrooifamilie zijn vermeld in een bijlage

° Speciale categorieën van aangehaalde documenten

"A" document dat de algemene stand van de techniek weergeeft, maar niet beschouwd wordt als zijnde van bijzonder belang
"E" eerder document, maar gepubliceerd op de datum van indiening of daarna
"L" document dat het beroep op een recht van voorrang aan twijfel onderhevig maakt of dat aangehaald wordt om de publikatiedatum van een andere aanhaling vast te stellen of om een andere reden zoals aangegeven
"O" document dat betrekking heeft op een mondelinge uiteenzetting, een gebruik, een tentoonstelling of een ander middel
"P" document gepubliceerd voor de datum van indiening maar na de ingeroepen datum van voorrang
"T" later document, gepubliceerd na de datum van indiening of datum van voorrang en niet in strijd met de aanvrage, maar aangehaald ter verduidelijking van het principe of de theorie die aan de uitvinding ten grondslag ligt
"X" document van bijzonder belang; de uitvinding waarvoor uitsluitende rechten worden aangevraagd kan niet als nieuw worden beschouwd of kan niet worden beschouwd op inventiviteit te berusten
"Y" document van bijzonder belang; de uitvinding waarvoor uitsluitende rechten worden aangevraagd kan niet worden beschouwd als inventief wanneer het document beschouwd wordt in combinatie met één of meerdere soortgelijke documenten, en deze combinatie voor een deskundige voor de hand ligt
"&" document dat deel uitmaakt van dezelfde octrooifamilie

Datum waarop het nieuwheidsonderzoek van internationaal type werd voltooid	Verzenddatum van het rapport van het nieuwheidsonderzoek van internationaal type
11 November 1999	

Naam en adres van de instantie	De bevoegde ambtenaar
European Patent Office, P B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx 31 651 epo nl, Fax: (+31-70) 340-3016	Noesen, R

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Formulier PCT/ISA/201 (tweede blad) (juli 1992)

VERSLAG VAN HET NIEUWHEIDSONDERZOEK VAN
INTERNATIONAAL TYPE
Informatie over leden van dezelfde octrooifamilie

Nummer van het verzoek om een nieuwheidsonderzoek
NL 1011051

In het rapport genoemd octrooigeschrift	Datum van publicatie	Overeenkomend(e) geschrift(en)	Datum van publicatie
WO 9816134 A	23-04-1998	US 5778803 A	14-07-1998
		AU 4983797 A	11-05-1998
		CA 2252939 A	23-04-1998
WO 9738604 A	23-10-1997	US 5687655 A	18-11-1997
		AU 2453497 A	07-11-1997
		US 5778803 A	14-07-1998
		US 5722331 A	03-03-1998
US 5632209 A	27-05-1997	KR 9602878 Y	09-04-1996
US 5588377 A	31-12-1996	GEEN	

Formulier PCT/ISA/201 (vervolgblad octrooifamilie) (juli 1992)

US 20160060084A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2016/0060084 A1**

(43) **Pub. Date: Mar. 3, 2016**

BAUDERMANN

(54) **LOADING APPARATUS**

(71) Applicant: **HOERBIGER HOLDING AG**, Zug (CH)

(72) Inventor: **Ulrich BAUDERMANN**, Zug (CH)

(21) Appl. No.: **14/933,564**

(22) Filed: **Nov. 5, 2015**

Related U.S. Application Data

(63) Continuation of application No. PCT/EP2014/001242, filed on May 8, 2014.

(30) **Foreign Application Priority Data**

May 8, 2013 (DE) 10 2013 008 020.7

Publication Classification

(51) **Int. Cl.**

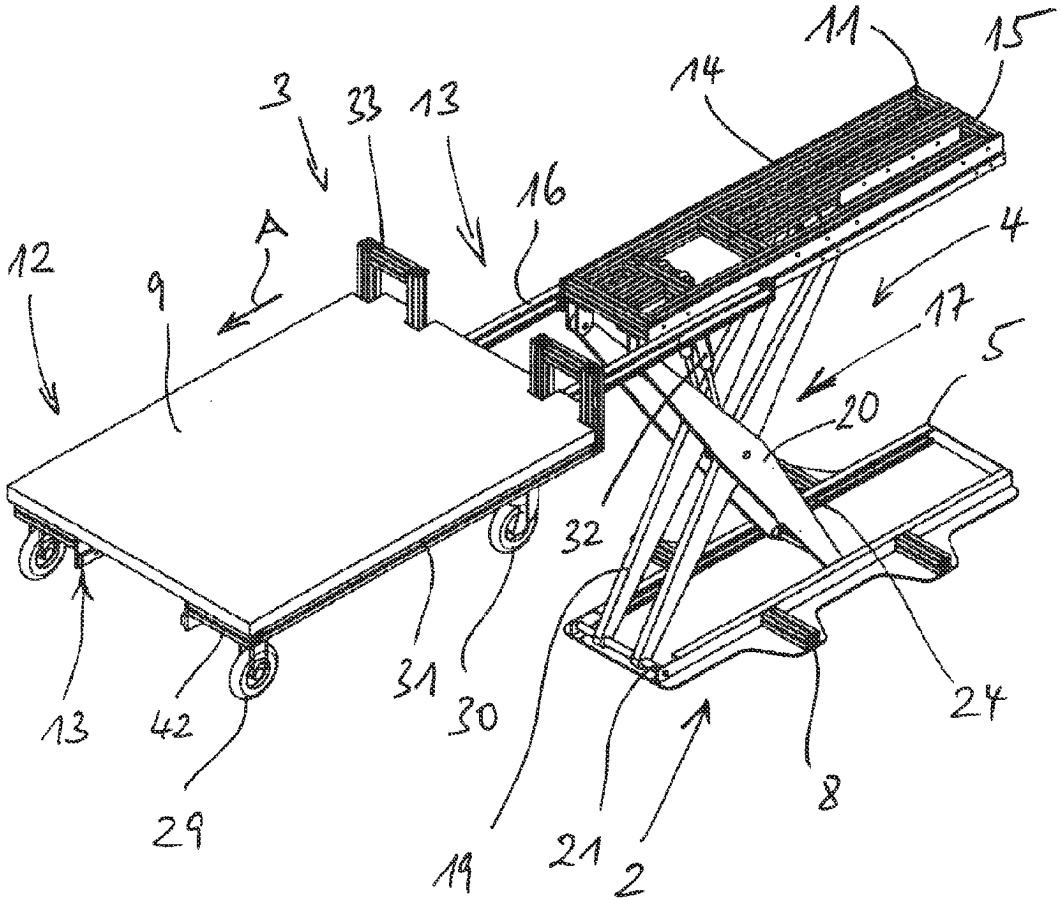
B66F 9/065	(2006.01)
B66F 9/24	(2006.01)
B66F 9/12	(2006.01)
B66F 17/00	(2006.01)
B66F 7/06	(2006.01)

(52) **U.S. Cl.**

CPC ***B66F 9/065*** (2013.01); ***B66F 17/00*** (2013.01); ***B66F 7/0625*** (2013.01); ***B66F 7/065*** (2013.01); ***B66F 9/122*** (2013.01); ***B66F 9/24*** (2013.01)

(57) **ABSTRACT**

A loading apparatus, in particular for conveying freight over a road surface and loading it into a transporting vehicle and unloading it therefrom, comprises a basic structure, a loading structure, with a freight holder, and a double-action lifting device between the basic structure and the loading structure. The loading structure here comprises a lifting frame, on which the lifting device acts, and a freight carrier, which is mounted on the lifting frame, via a pull-out guide with a pull-out direction oriented transversely to the lifting direction, and has the freight holder. An undercarriage serving for advancing the loading apparatus over the road surface is part of the freight carrier.



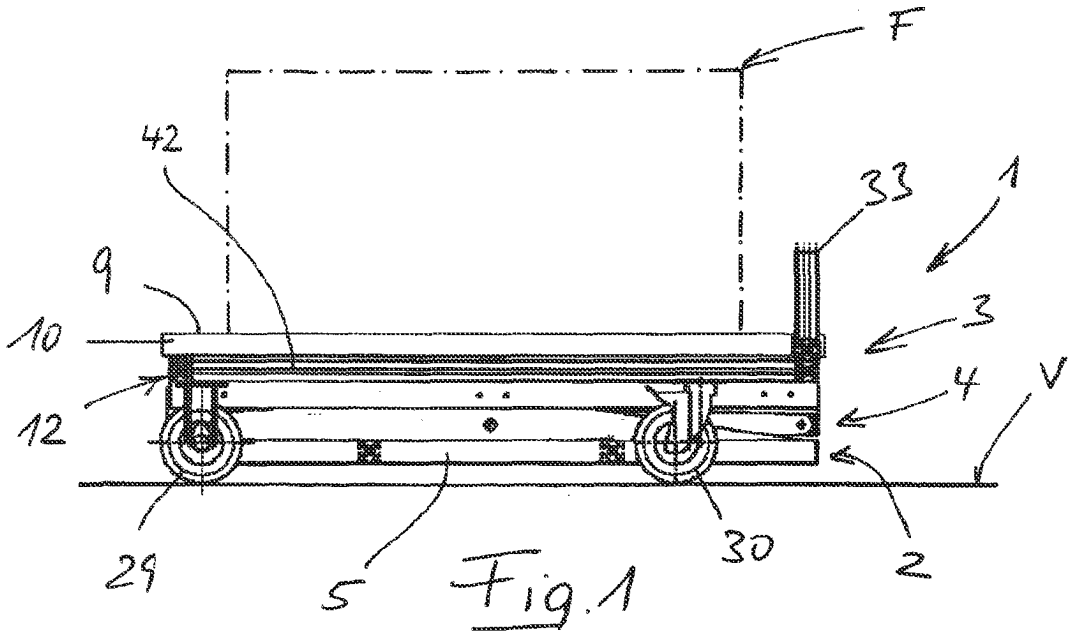


Fig. 1

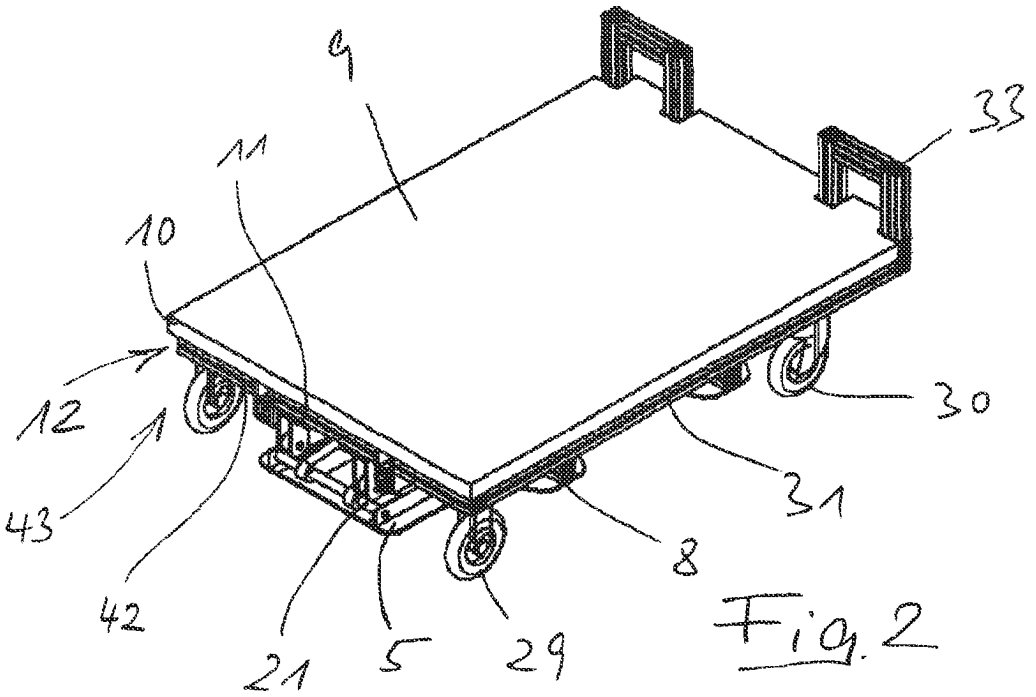


Fig. 2

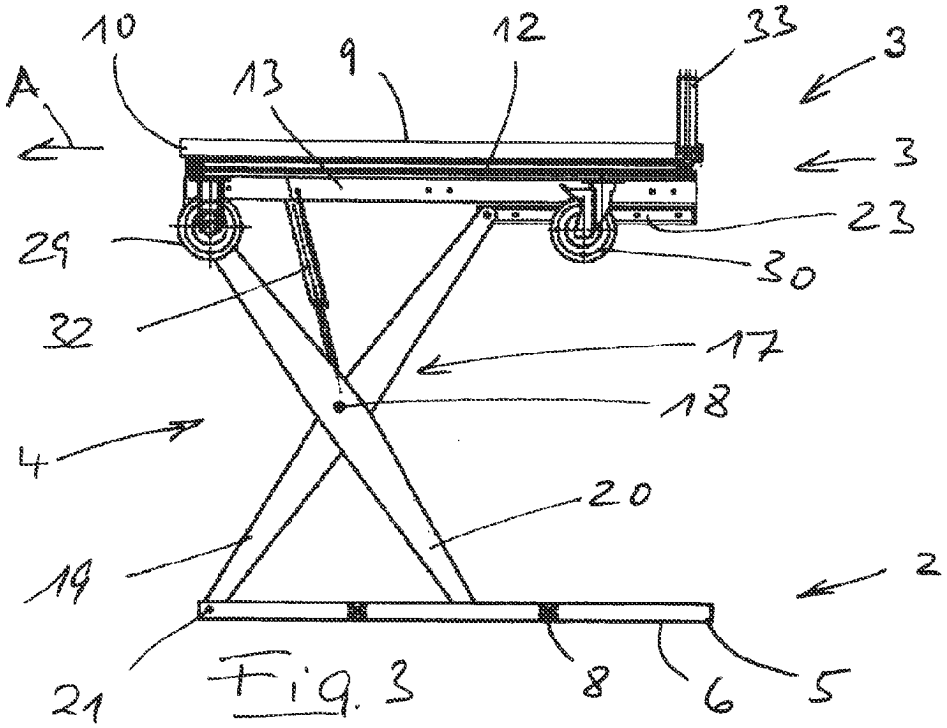

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Fig. 3

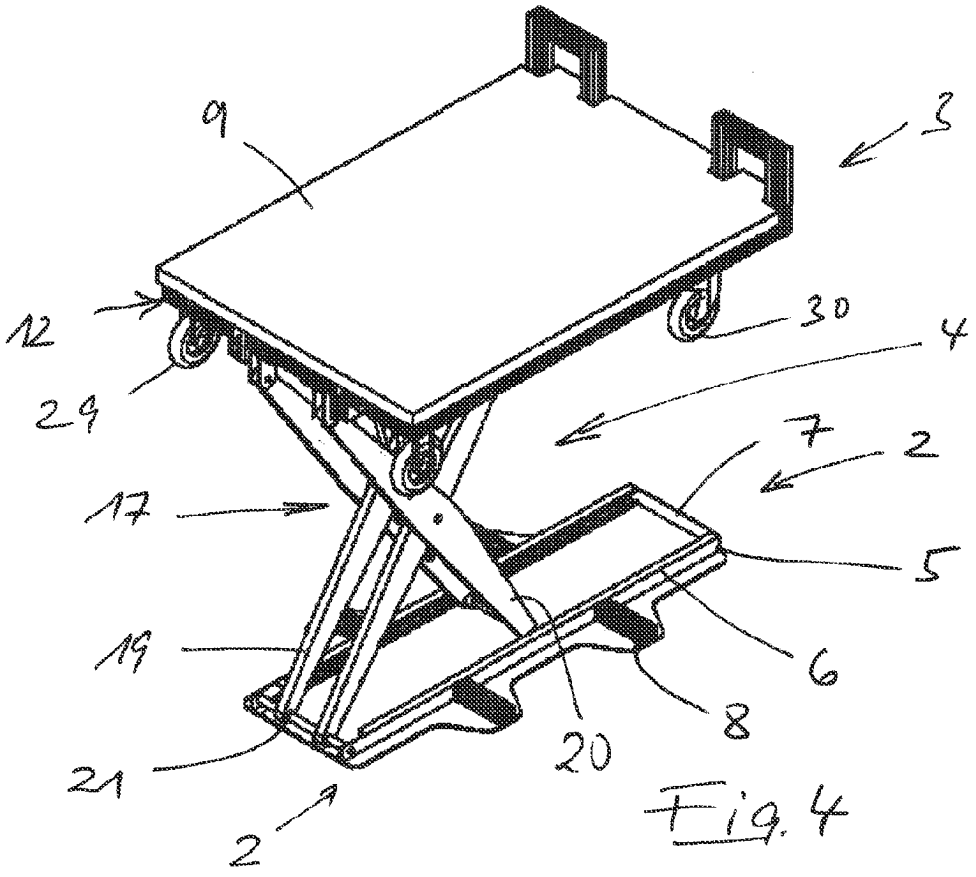

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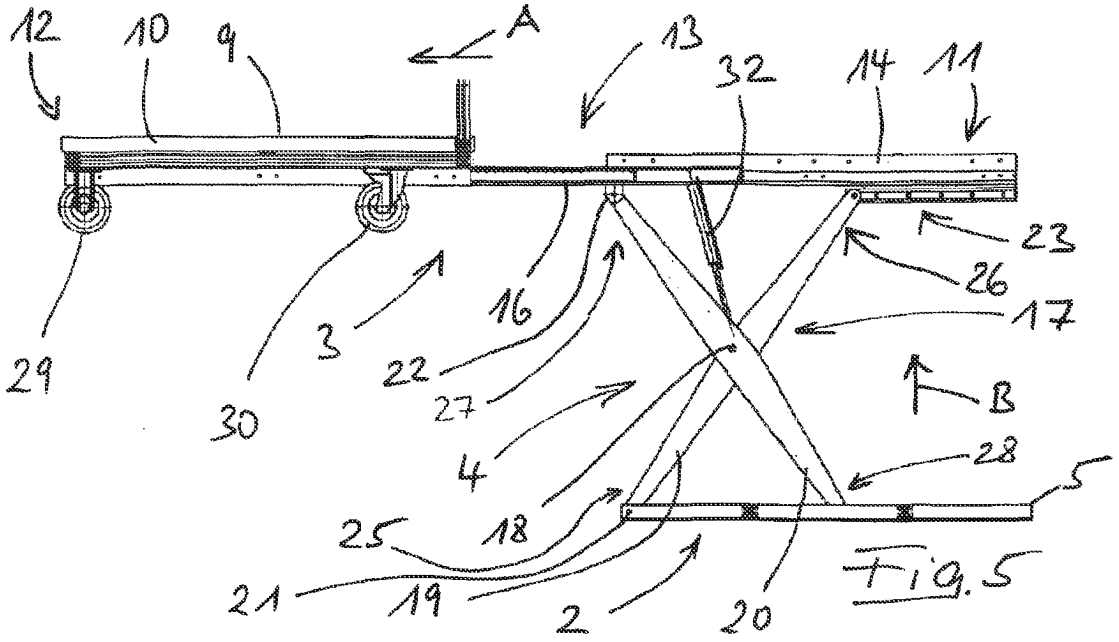

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Fig. 5

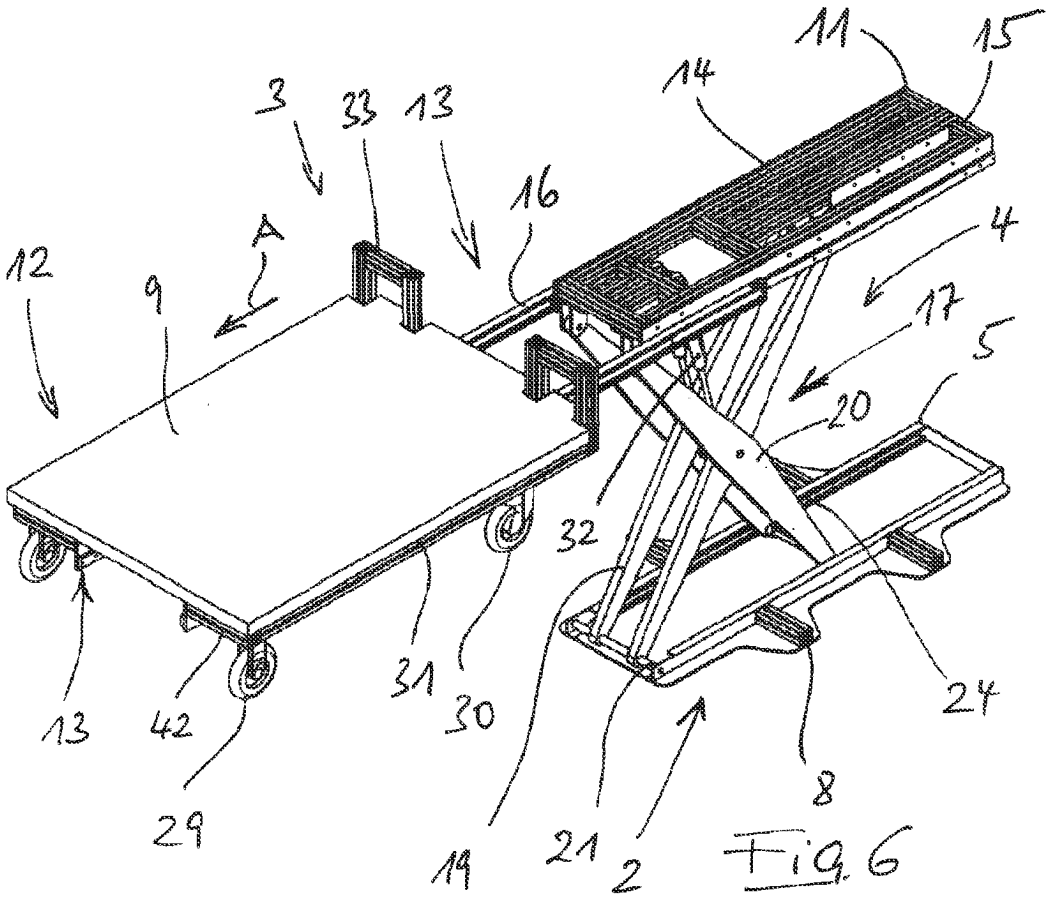

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Fig. 6

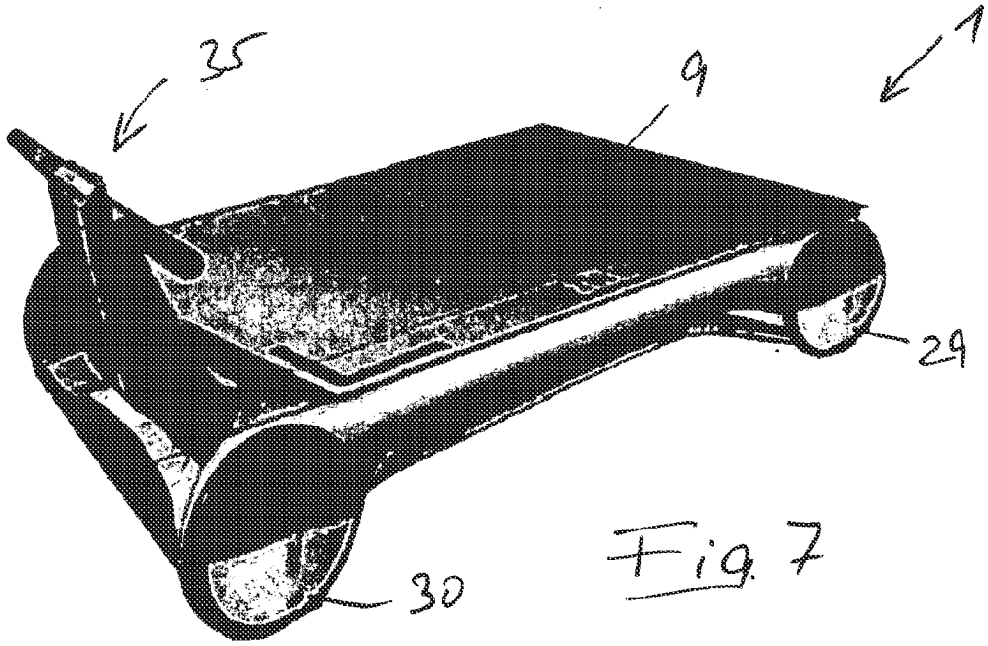


Fig. 7

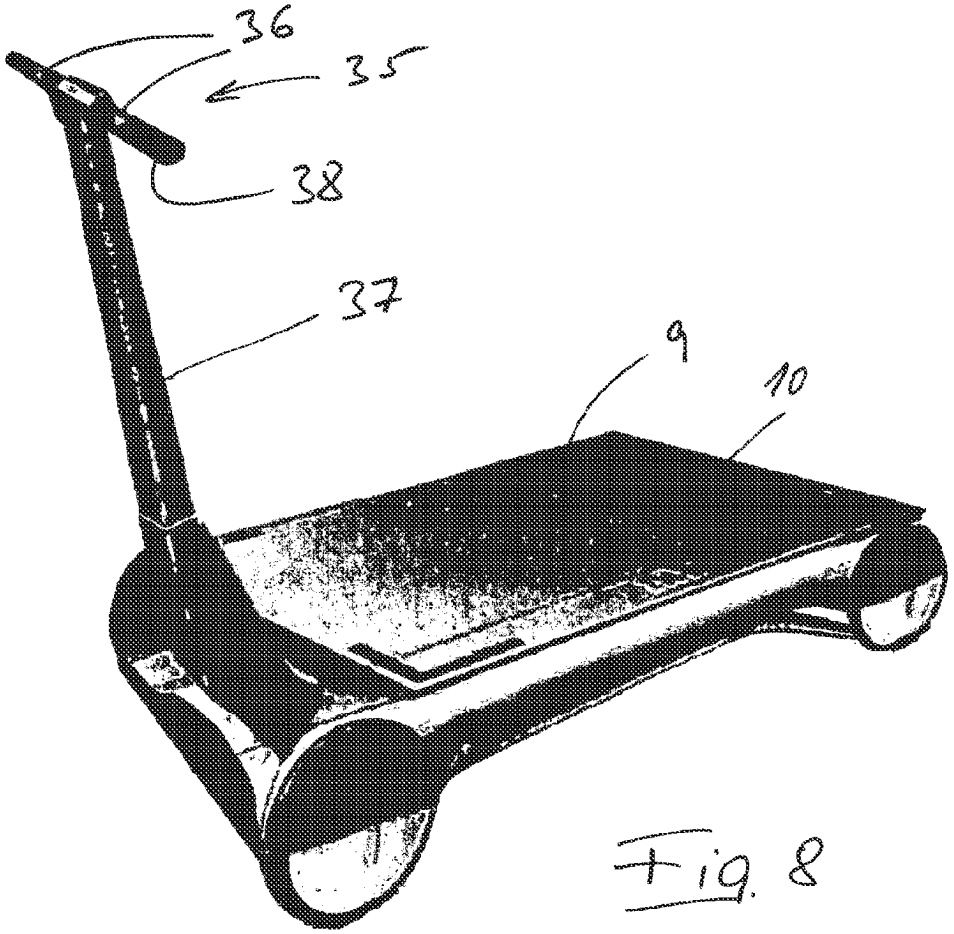


Fig. 8

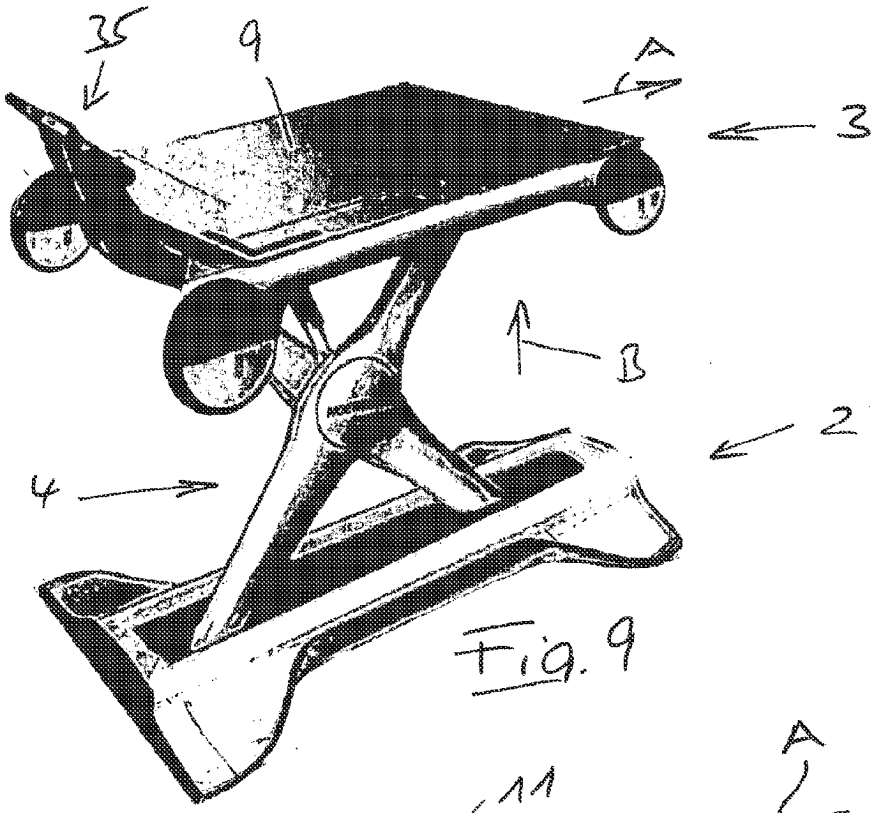


Fig. 9

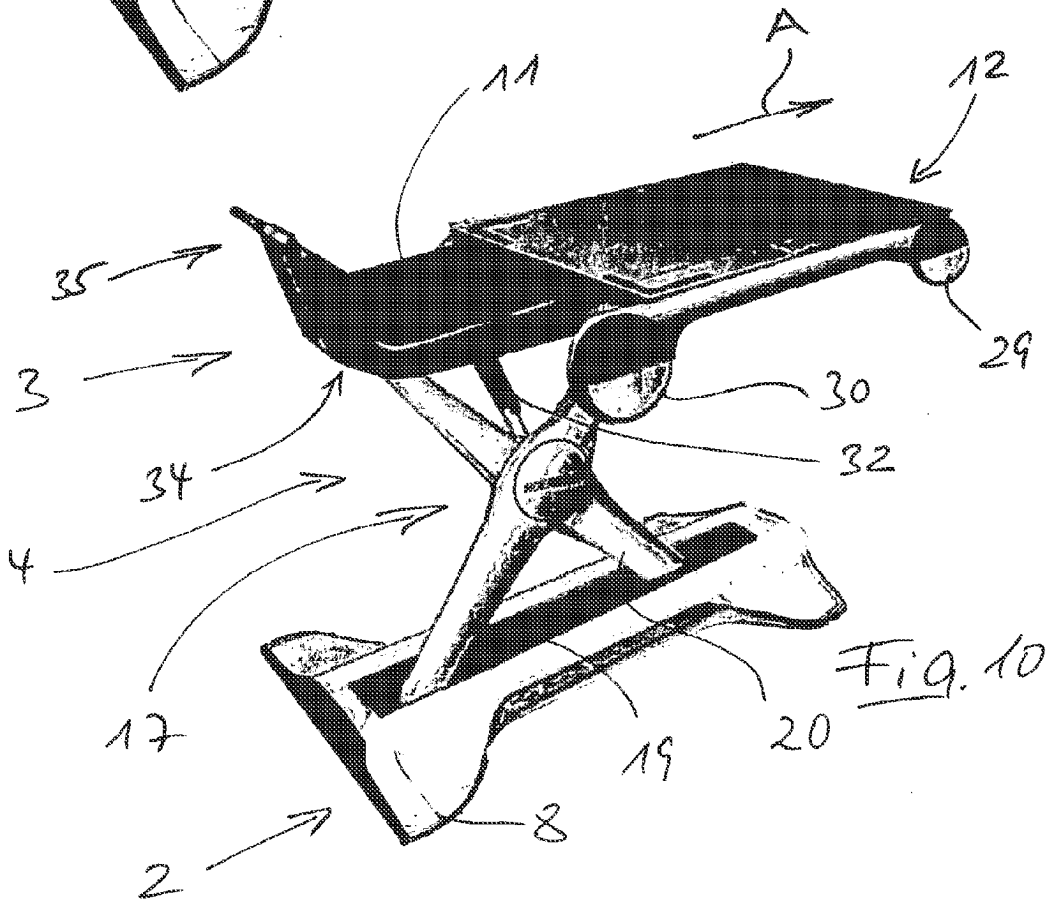


Fig. 10

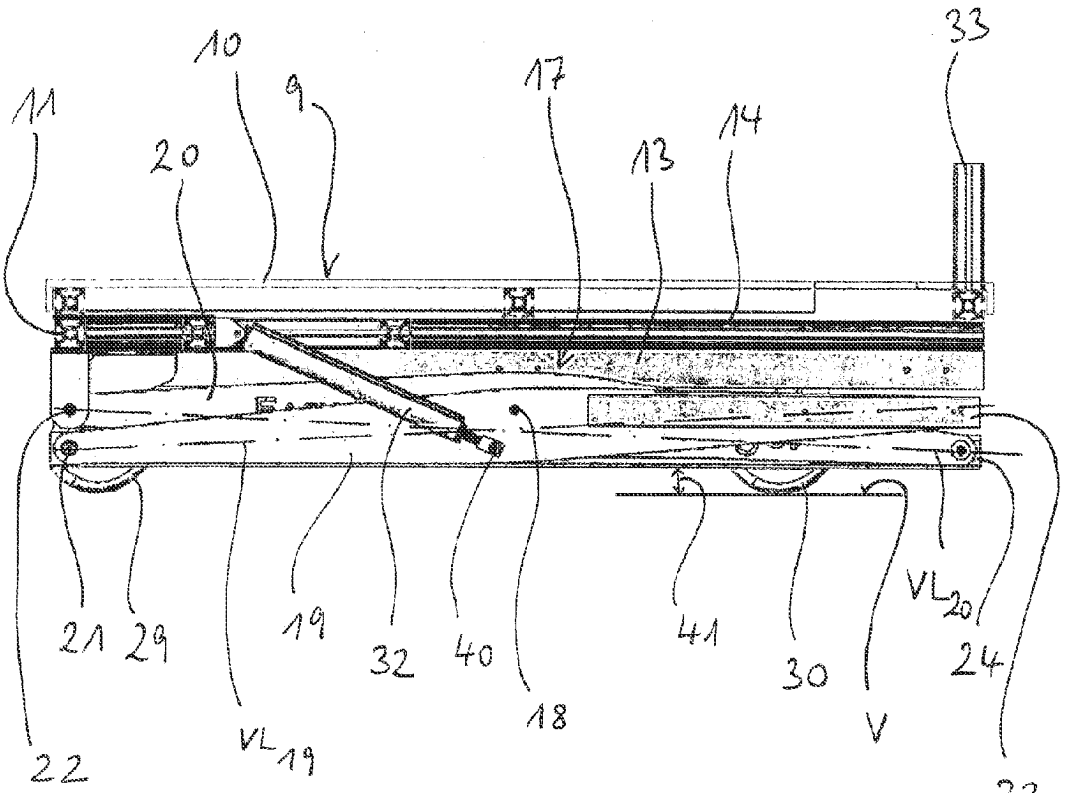


Fig. 11

LOADING APPARATUS

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation under 35 U.S.C. §120 of International Application PCT/EP2014/001242, filed May 8, 2014, which claims priority to German Application 10 2013 008 020.7, filed May 8, 2013, the contents of each of which are incorporated by reference herein.

FIELD OF THE INVENTION

[0002] The present invention relates to a loading apparatus, suitable in particular for conveying freight over a road surface and loading it into or unloading it from a transport vehicle, comprising a base structure, a loading structure with a freight holder and a double-acting lifting device between the base structure and the loading structure.

BACKGROUND

[0003] In the prior art there are numerous proposals for loading apparatuses of the type mentioned in the foregoing, which consistently have the objective of facilitating the loading or unloading of transport vehicles with freight, in order that this—together with the conveying of the freight over a road surface—can be handled if at all possible by a single person. In this way it is intended, for example, that the personnel needed for outgoing delivery of freight can be reduced by eliminating the need for a co-driver, who is active exclusively for a short time during the loading process. Because the lifting device is double-acting by design, it can be used not only for raising or lowering the loading structure (together with the loaded freight) but in the same way—when the loading structure is resting on the loading surface of the transport vehicle—for raising the basic structure, in order that the loading apparatus can be stowed on the loading surface of the transport vehicle.

[0004] The pertinent prior art is represented in particular by publications such as FR 1506606, DE 2530634, U.S. Pat. No. 4,061,237, WO 83/04266, U.S. Pat. No. 4,613,272, WO 92/07746, EP 889000, US 2005/0042068 and CN 201896055 U.

[0005] Although a need for loading apparatuses of the type mentioned in the introduction obviously exists, it has not been possible—with one exception—to establish the diverse proposals in practice. And even the loading apparatus according to WO 92/07746 or CN 201896055 U—marketed under the trade name "Innolift"—does not meet the expectations placed on it.

SUMMARY

[0006] The object of the present invention is to provide a loading apparatus of the type mentioned in the introduction that is characterized by better practicality.

[0007] This object is achieved according to the present invention by the fact that, in a loading apparatus of the type mentioned in the introduction, the loading structure comprises a lifting frame, on which the lifting device acts, and a freight carrier, which is mounted on the lifting frame via a pull-out guide with a pull-out direction oriented transversely relative to the lifting direction and is equipped with the freight holder, wherein an undercarriage serving for travel of the loading apparatus over the road surface is part of the freight carrier. In a synergistic functional interaction with one another, the features defining the inventive loading apparatus result in combination with one another in a series of major advantages relevant for practice, which in particular expand the service capabilities of the loading apparatus substantially, facilitate its handling and increase the safety decisively, wherein a loading apparatus exhibiting all of these advantages can be built with relatively simple—and thus reliable—as well as lightweight and compact construction. It is precisely the concern for safety—in cooperation with the other features characteristic for the inventive loading apparatus—that is responsible for the construction of the loading structure in multiple parts, in the sense that the freight holder is disposed on a freight carrier, which is mounted via a pull-out guide on a lifting frame, on which the lifting device—which brings about raising and lowering of the loading structure while the base unit is standing on the road surface—acts in turn, since in this way the freight can be pushed into the loading space or onto the loading surface (final surface) of the transport vehicle without simultaneous movement of the base structure relative to the road surface (starting surface). The loading apparatus, i.e. its base structure, does not have to be maneuvered over the road structure with raised load or raised freight, either during loading of the transport vehicle with the freight or during unloading of the freight from the transport vehicle. This is an invaluable advantage precisely with regard to applications in which a relatively uneven road surface or a relatively uneven other terrain exists (for example during construction-site operation), because such an uneven terrain makes it very difficult to maneuver known loading apparatuses (especially loaded with heavy freight) during their use, and above and beyond this represents a considerable safety risk, especially for maneuvering the loading apparatus with raised load, because of the danger of tilting. In contrast to the situation in that prior art (U.S. Pat. No. 4,613,272, WO 92/07746 and CN 201896055 U), in which part of the base structure is pushed far under the transport vehicle, the inventive loading apparatus can also be used in the situation (which actually often exists) that the transport vehicle is driven up to a curb and, in fact, typically so far that this curb is somewhat underneath the loading edge. Even the sequence of events possible in application of the invention is more homogeneous and marked by fewer interruptions than is the case for the prior art (especially during use of loading apparatuses according to WO 92/07746 and CN 201896055 U), namely especially in view of the fact that the loading apparatus is typically still arranged on the loading surface of the transport vehicle after loading. For this purpose it is necessary, according to the prior art, to transfer the load—by partly raising the loading structure—back onto the base structure equipped with the undercarriage, in contrast to which, in inventive loading apparatuses, the load is directly deposited onto the undercarriage disposed on the freight carrier (especially on wheels, which together with the load-bearing structural zones of the freight carrier are part of the undercarriage serving for travel of the loading apparatus). A series of further advantages will become apparent from the detailed explanation hereinafter of the present invention and specific preferred improvements.

[0008] The explanations of the present invention in the foregoing—and also hereinafter—show that the features defining the inventive loading apparatus are to be broadly understood, unless otherwise specified. Thus the base structure may have any desired structural and static geometry by means of which the definitive function, that of bracing the lifting structure on the road surface, can be satisfied. In turn,

any device by means of which the loading structure can be raised (and lowered) while the base structure is braced on the road surface and the base structure can be raised (and lowered) while the loading structure is fixed, i.e. braced on the loading surface of a transport vehicle, for example, is suitable as the lifting device. Likewise the phrase "road surface" is to be broadly construed, and it encompasses every load-bearing, i.e. walkable or drivable terrain. Furthermore, "lifting frame" is to be understood as any structure that is suitable for being connected to the lifting device and for directing the forces transmitted from the freight carrier (together with the freight it contains) via the pull-out guide to the lifting frame into the lifting device. Even the "pull-out" guide is not subject to any structural restrictions; to the contrary, such a "pull-out guide" may be realized by any structure of substantially linearly variable length capable of transmitting forces transversely relative to the pull-out direction. Even the statement that the pull-out direction is oriented "transversely" relative to the lifting direction means no more, in the broadest sense, than that the pull-out direction is oriented more or less at right angles to the lifting direction, i.e. in particular is more or less horizontal when the lifting direction is more or less vertical.

[0009] Also, and precisely with regard to the "undercarriage", no structural restrictions apply. Whereas for most applications the present invention can be realized advantageously with wheeled vehicles, which preferably have four wheels, this is in no case mandatory. Other suitable undercarriages that can be used advantageously for certain applications are, for example, track-laying undercarriages, skid undercarriages, air-cushion undercarriages, magnetic-levitation undercarriages and the like. The sole deciding factor is that travel over solid terrain such as the road surface and/or the loading surface of a transport vehicle is possible. When the present invention is being explained hereinafter on the basis of an alternative embodiment, in which the undercarriage has the form of a wheeled undercarriage, the sole purpose is to facilitate understanding without being constrained thereby to wheeled vehicles. The demonstrated viewpoints, unless otherwise indicated, are equally valid for other types of undercarriage.

[0010] According to a first preferred improvement of the invention, the undercarriage—forming part of the freight holder—comprises (preferably four) wheels, which particularly preferably are disposed on the side edges of the freight carrier and, in fact, ideally are directly under the lateral boundaries of the freight carrier or immediately adjacent to the outside thereof. This permits a large track width of the undercarriage, which represents an important safety-relevant aspect. In addition, wheels with a relatively large diameter can be used in particular in this case, which facilitates manipulation and—again with respect to the use of the loading apparatus on an uneven terrain—is also a safety-relevant aspect. In the interests of good manipulability, preferably at least some of the wheels are steerable, i.e. the wheels in question are designed, for example, as steering rollers (which if necessary can be locked for straight-ahead motion); this facilitates maneuvering of the loading apparatus over the road surface and/or the loading surface of the transport vehicle. In addition, preferably at least some of the wheels are equipped with brakes, which can be applied, for example, during the loading process, when the freight carrier has been deposited on the loading surface of the transport vehicle and—by use of the lifting device—the base structure is to be raised in order to be subsequently pushed under the loading structure once again. (As regards the possibility of storing the lifting device in the flattest possible space-saving form underneath the loading structure, the use of a scissor lift, explained in detail hereinafter, is to be particularly preferred.) For manipulation of the loading apparatus, it is then favorable for the brakes to be remotely operable, for example by a handle mounted at the rear end of the loading apparatus and equipped with appropriate operator controls.

[0011] Now that the base structure with raised load does not have to be moved on the terrain, sufficient tilting safety can typically be achieved with a base structure that does not extend laterally beyond the track width of the wheels. This permits a compact construction of the loading apparatus, wherein space for even the complete base structure is even available in general in the intermediate space between the wheels. However, it may also be provided with support feet, on the side set opposite to the pull-out direction, with a span corresponding substantially to the track of the wheels. According to yet another improvement of the invention, also under consideration, the base structure may be equipped with support feet capable of being extended, pulled out and folded out, to increase the stability even more for extreme applications.

[0012] Now that the undercarriage suitable for conveying the loading apparatus (together with freight it contains if necessary) over the road surface is part of the freight carrier, no wheels have to be disposed on the base structure. This saves weight, and from static viewpoints is a great advantage. However, the absence of wheels or rollers on the base structure is not an absolute necessity. For example, it is possible to provide (small) rollers, which serve solely for supporting the weight of the base structure while the loading apparatus is being maneuvered over the road surface, so that this does not have to be raised by the lifting device.

[0013] According to yet another preferred improvement of the present invention, the lifting device comprises a scissor lift. This is favorable with regard to the kinematics and also with regard to the statics as well as the possibility of making the inventive loading apparatus extremely compact and lightweight. In particular, in the case of use of a scissor lift as part of the lifting device, the latter can be collapsed to particularly flat and space-saving shape, so that in this configuration it can be stored underneath the loading structure. Particularly advantageously, at least one of the arms of this scissor lift is cranked and/or a drive element engages with one of the arms at a position offset from the pivot point of the scissor lift, thus permitting the provision of adequately large lifting forces with—when the loading structure is lowered—particularly flat scissor lifts. In the sense of favorable kinematic conditions, the bearing of the scissor lift located in pull-out direction (of the freight holder) on the base structure is designed particularly preferably as a fixed bearing; this means that the bearing of the scissor lift located opposite the pull-out direction on the base structure is constructed as a floating bearing (with support element guided in at least one linear guide).

[0014] Another preferred improvement of the present invention is characterized in that the lifting device comprises an electrical or an electrohydraulic drive unit. This permits compact and nevertheless very powerful loading apparatuses, wherein, especially for larger loading apparatuses intended for lifting particularly heavy freights the use of electrohydraulic drive units for the lifting devices is particularly advantageous. An electrical storage unit of the drive unit provided in this respect is disposed particularly preferably on the load-

ing structure, and, in fact, particularly preferably on the lifting frame on its front side located at the front in pull-out direction. This contributes to a relatively favorable weight distribution, especially with regard to the phase of raising or lowering of the base structure for freights resting on the loading surface of the transport vehicle, without the need (which would be necessary if the storage unit were disposed on the freight carrier) for complex laying of electrical conductors. When this electrical storage unit is provided with a charging terminal, which can be connected to the electrical system of a transport vehicle (designed as a motor vehicle), a relatively small electrical storage unit is sufficient for typical applications. This is advantageous with regard to costs, weight and overall size of the loading apparatus. It is also favorable to construct the electrical storage unit of the drive unit as an interchangeable battery. This permits a very small size of the storage unit, so that it fits in a relatively compact loading apparatus without hereby restricting the use capabilities of the loading apparatus. An interchangeable battery removed from the loading apparatus may be recharged on the electrical system of a transport vehicle.

[0015] In yet another preferred improvement of the present invention, a further drive unit brings about extension and retraction of the freight carrier relative to the lifting frame. Such an extending drive may be of electrical type, for example. Likewise, such an extending drive could comprise, for example, a hydraulic cylinder, which is supplied by the hydraulic assembly of the electrohydraulic drive unit of the lifting device. From viewpoints of operating safety, it is advantageous if a controller, which controls the extension movement with due consideration of safety-relevant parameters, acts on the extending drive. In this way, for example, the signal of at least one sensor disposed on the freight carrier, preferably in the region of the front wheels, and serving to detect the position of the freight carrier relative to a loading surface, can be processed in the controller in such a way that the extension of the freight carrier (which takes place over a set extension distance of, for example, 400 mm) is suppressed if the undercarriage is not located at least partly over a loading surface. The height of the undercarriage of the freight carrier above the loading surface can also be taken into consideration in the controller in such a way that (further) extension of the freight carrier is suppressed when the undercarriage is located at a height above a loading surface that exceeds a permissible value. Furthermore, signals of load sensors, which are assigned to support feet of the base structure and/or to wheels of the undercarriage, can be evaluated in the controller of the extending drive for the purpose of suppressing (further) extension of the freight carrier when a load situation suggestive of an increasing tilting danger is determined. The said safety-relevant parameters may also be used additionally (or alternatively) for generation of a notification or warning.

[0016] Under static viewpoints, it may be favorable for the base structure to have a relatively large, continuous bearing surface bracing it on the road surface. Conversely, however, it may also be advantageous for certain applications to dispose distinct support feet on the base structure. This is applicable in particular when a load sensor (see above) is assigned to at least one support foot, to monitor the load situation and, for example, to emit a signal when the load distribution approaches a critical point with regard to stability. Such load sensors may also be assigned with the same advantage to at least one of the wheels disposed on the freight carrier.

[0017] Particularly preferably, the freight carrier and the lifting frame can be interlocked relative to one another. And preferably the lifting device can be locked in a partly raised position of the loading structure. This makes it possible, when the transport vehicle is en route, to secure the loading apparatus on the loading surface in such a way that the loading structure is raised so far by means of the lifting device that the wheels disposed on the freight carrier are raised from the loading surface, wherein the location of the freight carrier and thus of the freight relative to the base structure is additionally secured via the interlocking of the freight carrier relative to the lifting frame. In this case it is advantageous, for example by means of an appropriate setting in a controller of the loading apparatus, to preset such a (partly raised) position of the lifting device, in which the undercarriage of the freight carrier is positioned just out of contact with the terrain, so that the entire weight of the loading apparatus and load—while keeping the center of gravity as low as possible—is braced exclusively via the base structure on the terrain. To secure the freight against or on the freight carrier, the latter is preferably provided with retainers suitable for attaching fastening and/or securing means for the freight, for example, eyes, boreholes, openings or hooks.

[0018] For operator control of the loading apparatus as well as arranging and maneuvering as well as actuation of scheduled drives, the loading apparatus is preferably provided on its rear end opposite the pull-out direction with a handle, which is equipped with corresponding operator controls for actuating the drives. Preferably such a handle is disposed on the base structure or the lifting frame. The arrangement and configuration of the handle are then preferably chosen such that it neither hinders the base structure from being pushed (preferably completely) underneath the loading structure, nor constantly projects perceptibly beyond the minimum contour of the main components of the loading mechanism (while the loading structure is lowered and the freight carrier retracted). In this sense the handle can be attached to the base structure or lifting frame by pivoting or hinged means, for example, and/or by retracting means. The handle and/or its attachment to the base structure or to the lifting frame is then advantageously designed such that grips disposed on it experience only slight or no change of their own height even when the height of the base structure or lifting frame above the terrain is changed in the intended manner during operation of the loading apparatus. Against the same background, it is particularly advantageous, according to another preferred improvement, when the handle is equipped with an extensible drawbar, which can be lengthened or shortened telescopically, for example, since this facilitates operator control of the loading device during its use as intended, during which the height of the lifting frame and of the base structure above the road surface is being changed. It is particularly convenient when the length of the drawbar can be varied by a length-adjusting drive. This can, in the interests of further increase in ease of operator control, be coupled phase-wise with the lifting drive, in the sense that the length of the drawbar shortens automatically when the component (base structure or lifting frame) to which it is attached is raised by means of the lifting device. In the case of attachment of the drawbar to the lifting frame, inverse (phase-wise) coupling of the length-adjusting drive of the drawbar with the drive of the lifting device must be provided for the purpose. Incidentally, it is advantageous from ergonomic viewpoints when the extension direction of the

drawbar is oriented obliquely relative to the lifting direction, i.e. in particular is inclined slightly toward the rear.

[0019] For the most diverse usability possible of the inventive loading apparatus, the freight carrier therein is provided, according to yet another preferred improvement, with an exchangeable attachment having a specific function or application. Such an attachment may be, for example, a (level) loading platform, a bulk goods holder or a special retainer (e.g. for a cable drum).

[0020] This means that particularly large loading apparatuses may be equipped with an additional propulsion drive, which acts on at least one of the wheels and which can be used to assist the operating person during movement of the loading apparatuses over the road surface (which may be uneven) or the loading surface of the transport vehicle (including arranging it).

[0021] Within the meaning of the foregoing explanations of the invention, the sequence of events during use thereof is as follows: the freight or load, seated on a starting surface, is conveyed on a freight carrier, which is part of a raisable loading structure and has an undercarriage serving travel. A base structure is deposited on the starting surface, and the loading structure—braced on the base structure—is raised so far that the undercarriage of the freight carrier is positioned above the level of a final surface higher than the starting surface. The freight carrier is extended transversely relative to the lifting direction and in the process is maneuvered over the final surface and, in fact, without simultaneous movement of the base structure, wherein the freight carrier is braced during each maneuver (after lowering as the case may be) with its undercarriage on the final surface. Once the freight carrier is resting completely on the final surface, the base structure is raised completely, retracted in the direction of the freight holder and maneuvered over the final surface. Travel of the freight or load over the final surface by means of the undercarriage of the freight carrier can then take place, and the position can also be secured by raising the undercarriage of the freight carrier from the final surface while placing the base structure on the final surface.

[0022] The inventive loading apparatus may be provided with at least one auxiliary roller, which can be disposed at variable positions on the front side of the freight carrier, although this is not necessary for typical applications. This may be used if necessary in connection with translational movement of the freight carrier over the loading surface of the transport vehicle, for example if the base structure is in unstable condition because the terrain is not load-bearing or else it has not been possible for some other reason to bring the loading apparatus directly up to the transport vehicle.

[0023] From the foregoing explanations it is apparent that the loading and unloading of transport vehicles by means of the inventive loading apparatus represents merely one example of many conceivable applications. The inventive loading apparatus, which in this context could also be described as a combined conveying and lifting device, can also be used in diverse other application environments, for example in picking and warehousing systems.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The present invention will be explained in more detail hereinafter on the basis of two exemplary embodiments illustrated in the drawing, wherein

[0025] FIG. **1** shows, in side view, a first embodiment of an inventive loading apparatus in a first configuration,

[0026] FIG. **2** shows, in perspective view, the embodiment according to FIG. **1** in its first configuration,

[0027] FIG. **3** shows, in side view, the embodiment according to FIGS. **1** and **2** in a second configuration,

[0028] FIG. **4** shows, in perspective view, the embodiment according to FIGS. **1** to **3** in its second configuration,

[0029] FIG. **5** shows, in side view, the embodiment according to FIGS. **1** to **4** in a third configuration,

[0030] FIG. **6** shows, in perspective view, the embodiment according to FIGS. **1** to **5** in its third configuration,

[0031] FIG. **7** shows, in perspective view, a second embodiment of an inventive loading apparatus in a second configuration,

[0032] FIG. **8** shows the embodiment according to FIG. **7** in a second configuration,

[0033] FIG. **9** shows the embodiment according to FIGS. **7** and **8** in a third configuration,

[0034] FIG. **10** shows the embodiment according to FIGS. **7** to **9** in a fourth configuration, and

[0035] FIG. **11** shows, in enlarged representation in a vertical section, a loading apparatus with a lifting device equipped with a preferred scissor lift.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0036] Loading apparatus **1** shown in various configurations (i.e. operating situations) and views in FIGS. **1** to **6** is used for conveying freight F over a road surface V as well as for loading the freight into or unloading it from a transport vehicle.

[0037] The loading apparatus comprises three main components, namely a base structure **2**, a loading structure **3** and a lifting device **4**, acting between base structure **2** and loading structure **3** and serving to raise and lower loading structure **3**. Thus lifting device **4** is double-acting in the sense that it is also suitable for raising base structure **2** when loading structure **3** is fixed in position.

[0038] Base structure **2** is constructed as a base frame **5** with two longitudinal beams **6** and two crossbeams **7** extending between them and transversely relative to them. On both sides two reinforced support feet **8** protrude sideways from longitudinal beams **6**. In the sense of a modification—which if necessary is expedient for reasons of stability—of base structure **2**, support feet capable of being extended, pulled out or folded out and having a broader span when deployed may also be used.

[0039] Loading structure **3**, which is provided with a freight holder **10**—constructed as a loading platform **9** in the present case—comprises a lifting frame **11**, a freight carrier **12** with loading platform **9** and a pull-out guide **13**, by means of which freight carrier **12** is mounted in pull-out relationship (arrow A) on lifting frame **11**. Lifting frame **11** comprises longitudinal beams **14** and crossbeams **15** extending between them and transversely relative to them. Lifting device **4** acts thereon. Pull-out direction A, in which freight carrier **12** can be extended from its position substantially flush with lifting frame **11** to a position offset relative to lifting frame **11**, is then oriented transversely relative to the lifting direction (arrow B), which is defined by the lifting and lowering movement of loading structure **3** relative to base structure **2**. By use of an intermediate rail **16**, pull-out guide **13** is constructed as a fully extensible means, so that freight carrier **12** in its extended position is offset completely relative to lifting frame **11**. Freight carrier **12** is provided with retainers (not illustrated in

more detail), which are suitable for attachment of fastening and/or securing means for freight F. In the sense of a modification—which is related to the application—freight carrier **12** could be adapted to the respective specific use, by being otherwise provided with, for example, a bulk-goods holder (such as a trough or the like) or a special retainer (such as a cable drum retainer or the like) instead of a loading platform **9**.

[0040] Lifting device **4** comprises a scissor lift **17** with two crossed arm pairs **19**, **20** joined pivotally to one another at crossing point **18**. Each arm pair **19**, **20** is pivotally joined at its one end with the component in question via a fixed bearing **21**, **22** and at its other end is guided displaceably on the other component along a linear guide **23**, **24**. Thus first arm pair **19** is pivotally joined at its lower end **25**—at the front in pull-out direction A—with base frame **5** via fixed bearing **21** and at its upper end **26** is guided displaceably on lifting frame **11** along a linear guide **23**; and second arm pair **20** is pivotally joined at its upper end **27** with lifting frame **11** via fixed bearing **22** and at its lower end **28** is guided displaceably on base frame **5** along a linear guide **24**. Accordingly, while loading structure **3** is being raised, crossing point **18** of the two arm pairs **19**, **20** follows a circular path around fixed bearing **21** of first arm pair **19** and in doing so (also) moves with a movement component in pull-out direction A. In the sense of a modification—which may be expedient for kinematic reasons—of scissor lift **17**, cranked arms (known as such) may also be used.

[0041] Four of the wheels **29**, **30** serving for travel of loading apparatus **1** over road surface V—in order to convey freight F over them—are disposed on freight carrier **12**, and, in fact on the side edges thereof directly underneath lateral rims **31**. Together with frame parts **42** of freight carrier **12** they form an undercarriage **43**. In the present case, front wheels **29**—in pull-out direction A—are constructed as fixed rollers, whereas rear wheels **30** are constructed as steering rollers, although obviously other embodiments of the wheels (e.g. four steering rollers) are also possible. Wheels **29**, **30** are equipped with (lockable) brakes, by means of which freight carrier **12** or loading apparatus **1** can be prevented from inadvertently rolling away. In contrast, no wheels are disposed on base structure **2** in the present case. Support feet **8** of base structure **2** are dimensioned such that they pass between rear wheels **30** of freight carrier **12**. In the sense of a modification, however, rear support feet **8** could also be offset to the rear behind rear wheels **30** and in this case dimensioned such that their span corresponds substantially to the track of wheels **29**, **30**. However, base structure **2**—in the interests of ease of manipulation of loading apparatus **1**—should not extend sideways beyond the track width of wheels **29**, **30**.

[0042] Loading apparatus **1** has several drives. In particular, lifting device **4** is equipped with a drive unit. This comprises two hydraulic cylinders **32**, which are disposed parallel to one another and which, linked pivotally on one of crossbeams **15** of lifting frame **11**, extend between lifting frame **11** and pivot pins disposed at crossing point **18** of arm pairs **19**, **20** of scissor lift **17**. Hydraulic cylinders **32** are pressurized by a hydraulic assembly—not illustrated—the pump of which is electrically powered. The electrical storage unit of the drive unit is disposed on freight carrier **12**. It has a charging terminal that can be connected to the electrical system of a transport vehicle designed as a motor vehicle. Alternatively, a purely electrical design of the drive unit of lifting device **4** would be possible, for example, especially for loading apparatuses with reduced power.

[0043] By means of a further drive, namely an electrical extending drive acting between lifting frame **11** and freight carrier **12**, freight carrier **12** can be extended into its extended position and refracted to its position flush with lifting frame **11**. Furthermore, freight carrier **12** can be interlocked relative to lifting frame **11**—for example by immobilizing pull-out guide **13** or blocking the extending drive—and lifting device **4** can be locked in a partly raised position of loading structure **3**. In this way loading apparatus **1** (and freight F that it contains) is secured on the loading surface of the transport vehicle during transport, specifically because freight carrier **12** is locked relative to lifting frame **11** and loading structure **3** is raised so far as a whole that wheels **29**, **30** no longer rest on the loading surface, and so the entire weight of freight F and loading apparatus **1** is braced via its base frame **5** on the loading surface.

[0044] In the embodiment according to FIGS. **1** to **6**, the operator control or actuation of the various drives by an operator-control person takes place by operator controls, which are integrated in handles **33** mounted on freight carrier **12**. In this respect in particular, the second embodiment illustrated in FIGS. **7** to **10** is based on a different principle. Therein a handle **35**, which has operator controls **36** for actuation of the various drives and which further serves to direct or maneuver loading apparatus **1** during its travel over the road surface or to do likewise for the loading surface of the transport vehicle, is disposed on lifting frame **11** at its end opposite pull-out direction A.

[0045] Handle **35** has a drawbar **37**, which is inclined slightly rearward from its stowed position (FIG. **7**) and can be extended telescopically into an operating position (FIG. **8**). The length-adjusting drive bringing about the adjustment of the length of drawbar **37** is then inversely coupled—via the controller of loading apparatus **1**—with the drive unit of lifting device **4** in such a way that, when loading structure **3** is raised, the length of drawbar **37** becomes substantially shorter by the proportion by which loading structure **3** is raised, with the result that grips **38** of handle **35** remain at least substantially at constant height while loading structure is being raised. The situation is analogous while loading structure **3** is being lowered. Incidentally, in this embodiment, the brakes assigned to wheels **29**, **30** can also be operated via operator controls **36** disposed on handle **35**.

[0046] Other striking deviations of the embodiment according to FIGS. **7** to **10** from that according to FIGS. **1** to **6** consist in structural details of scissor lift **17** as well as pull-out guide **13** for freight carrier **12**, although the deviations have no effect on the basic function, and so the foregoing explanations about the first embodiment are essentially valid for the second as well. Incidentally, wheels **29**, **30** are also configured differently in the second embodiment compared with the first. They are disposed laterally on freight carrier **12**, and so—in the interests of increased fitness for use on uneven road surfaces—they may have a relatively large diameter.

[0047] Incidentally, especially load sensors, which are assigned to wheels **29**, **30** and/or to support feet **8** of base structure **2**, may be connected to the controller of the loading apparatus. By monitoring the load situation at support feet **8** and/or wheels **29**, **30**, load conditions that could be critical for the stability of loading apparatus **1** are detected early, and a

warning (e.g. acoustic) can be tripped and/or one or more drives can be automatically locked.

[0048] Concerning the embodiment illustrated in FIG. **11**, this is explained directly from the foregoing explanations for FIGS. **1** to **10**. What must be pointed out, however, is the readily apparent slightly cranked shape of arms **19** and **20** of scissor lift **17**, to the effect that the pivot provided at crossing point **18** does not lie exactly on connecting lines VL**19** and VL**20** of the two bearings disposed respectively at the ends of arms **19**, **20**, but instead are offset slightly upward relative to these connecting lines. Conversely, relative to connecting line VL**19**, link point **40** of hydraulic cylinders **32** on arms **19** is offset slightly downward from the bearing at its end. This feature yields a scissor lift **17** that is so flat in its (shown) completely retracted configuration that not only does it have space (projecting slightly upward between pull-out guides **13**) underneath loading structure **3** but also a sufficient bottom clearance **41** still remains, and does so even if arms **19**, **20** are dimensioned with sufficient thickness to lift heavy loads and the kinematics of the drive are appropriate for lifting heavy loads. It is also evident in FIG. **11** that lifting frame **11** and the two frame parts **42** of freight carrier **12** joined thereto via pull-out guides **13**, as already illustrated in FIGS. **1** to **6**, lie substantially in the same plane, in which case lifting frame **11** finds space between frame parts **42** of the freight carrier **11** when freight carrier is in the retracted position.

[0049] In both embodiments, the sequence during loading of a transport vehicle with freight F (including conveying of the freight to the transport vehicle) typically takes place as follows:

[0050] Loading apparatus **1** is moved together with lowered loading structure **3** and freight F contained on its retracted freight carrier **12**—on wheels **29**, **30** disposed on freight carrier **12**—over road surface V to the transport vehicle, while the pull-out guide is interlocked and base structure **2** is completely raised by means of lifting device **4**.

[0051] Loading apparatus **1** is positioned adjacent to the transport vehicle, close to the access opening to its loading surface, and, in fact, with pull-out direction A pointing toward the transport vehicle.

[0052] Depending on the conditions of the ground surface, wheels **29**, **30** may or should be braked in this situation.

[0053] To deposit base structure **2** on the road surface and then raise loading structure **3**, lifting device **4** is actuated and, in fact, long enough until wheels **29**, **30** of freight carrier **12** are positioned slightly above the level of the loading surface of the transport vehicle. If it has been necessary to apply the brakes of wheels **29**, **30**, they may be released again.

[0054] After pull-out guide **13** has been unlocked, freight carrier **12** is maneuvered in pull-out direction A using pull-out guide **13** (and the extending drive if present), whereupon it advances increasingly over the loading surface of the transport vehicle.

[0055] As soon as front wheels **29** of freight carrier **12** are positioned over the loading surface of the transport vehicle, loading structure **3** is lowered by means of lifting device **4** so far that front wheels **29** of freight carrier **12** rest on the loading surface of the transport vehicle.

[0056] Freight carrier **12** is maneuvered—by continued use of pull-out guide **13** (and of the extending drive if necessary)—further in pull-out direction A, whereupon rear wheels **30** of freight carrier **12** also rest on the loading surface of the transport vehicle.

[0057] The brakes of wheels **29**, **30** are applied.

[0058] Lifting device **4** is actuated in the sense that base structure **2** is raised.

[0059] When base structure **2** is completely raised, it is retracted, i.e. pushed underneath loading structure **3**, using pull-out guide **13** (and the extending drive if necessary). Then pull-out guide **13** is interlocked.

[0060] The brakes are released, allowing loading apparatus **1** to be arranged in its final position on the loading surface of the transport vehicle.

[0061] Depending on the standing conditions of the transport vehicle, wheels **29**, **30** may or should be braked upon reaching the final position.

[0062] By means of lifting device **4**, loading structure **3** is raised slightly, namely so far until wheels **29**, **30** of the loading surface of the transport vehicle are lifted. Lifting device **4** is locked in this position.

[0063] If necessary, freight F—remaining on loading apparatus **1**—may be secured directly on the transport vehicle using separate securing means, to prevent slipping, etc.

[0064] Freight is unloaded from the transport vehicle by proceeding in the inverse sequence.

What is claimed is:

1. A loading apparatus (**1**), especially for conveying freight (F) over a road surface (V) and loading it into or unloading it from a transport vehicle, comprising:
- a base structure (**2**),
- a loading structure (**3**) with a freight holder (**10**) and
- a double-acting lifting device (**4**) between the base structure (**2**) and the loading structure (**3**),
- wherein the loading structure (**3**) comprises a lifting frame (**11**), on which the lifting device (**4**) acts, and a freight carrier (**12**), which is mounted on the lifting frame (**11**) via a pull-out guide (**13**) with a pull-out direction (A) oriented transversely relative to the lifting direction (B) and is equipped with the freight holder (**10**), and
- wherein an undercarriage (**43**) serving for travel of the loading apparatus (**1**) over the road surface (V) is part of the freight carrier (**12**).

2. The loading apparatus of claim **1**, wherein the undercarriage (**43**) comprises wheels (**29**, **30**), preferably four wheels (**29**, **30**), which particularly preferably are disposed on the side edges of the freight carrier (**12**).

3. The loading apparatus of claim **2**, wherein that at least some of the wheels (**29**, **30**) are steerable.

4. The loading apparatus of claim **2**, wherein at least some of the wheels (**29**, **30**) are equipped with brakes, which preferably can be remotely actuated.

5. The loading apparatus of claim **1**, wherein the base structure (**2**) does not extend laterally beyond the width of the undercarriage (**43**), especially the track width of the wheels (**29**, **30**).

6. The loading apparatus of claim **5**, wherein the width of the base structure (**2**) on its side opposite the pull-out direction (A) corresponds substantially to the width of the undercarriage (**43**), especially the track width of the wheels (**30**).

7. The loading apparatus of claim **1**, wherein support feet (**8**) are disposed on the base structure (**2**).

8. The loading apparatus of claim **7**, wherein a load sensor is assigned to at least one of the support feet (**8**).

9. The loading apparatus of claim **7**, wherein at least one of the support feet (**8**) can be laterally extended, pulled out or folded out.

10. The loading apparatus of claim **1**, wherein no wheels are disposed on the base structure (**2**).

11. The loading apparatus of claim **1**, wherein an extending drive acting between the lifting frame (**11**) and the freight carrier (**12**) is provided.

12. The loading apparatus of claim **11**, wherein a controller, which controls the extension movement with due consideration of safety-relevant parameters, acts on the extending drive.

13. The loading apparatus of claim **1**, wherein at least one sensor for detection of the position of the freight carrier (**12**) relative to a loading surface is disposed on the freight carrier (**12**), preferably in the region of the front wheels (**29**).

14. The loading apparatus of claim **1**, wherein the lifting device comprises a scissor lift (**17**).

15. The loading apparatus of claim **14**, wherein at least one of the arms (**19**, **20**) of the scissor lift is cranked and/or a drive element (**32**) acts on one of the arms (**19**) at a position offset from the pivot point (**18**).

16. The loading apparatus of claim **14**, wherein the bearing of the scissor lift (**17**) located in pull-out direction (A) on the base structure (**2**) is designed as a fixed bearing (**21**).

17. The loading apparatus of claim **1**, wherein the lifting device (**4**) comprises an electrical or an electrohydraulic drive unit.

18. The loading apparatus of claim **17**, wherein an electrical storage unit of the drive unit is disposed on the lifting frame (**11**), preferably on its front side pointing in pull-out direction (A).

19. The loading apparatus of claim **17**, wherein an electrical storage unit of the drive unit is designed as an interchangeable battery.

20. The loading apparatus of claim **17**, wherein an electrical storage unit of the drive unit is provided with a charging terminal, which can be connected to the electrical system of a transport vehicle designed as a motor vehicle.

21. The loading apparatus of claim **1**, wherein at least one auxiliary roller is disposed at variable positions on the front side of the freight carrier (**12**).

22. The loading apparatus of claim **1**, wherein the freight carrier (**12**) can be interlocked relative to the lifting frame (**11**).

23. The loading apparatus of claim **1**, wherein the lifting device (**4**) can be locked in a partly raised position of the loading structure (**3**).

24. The loading apparatus of claim **1**, wherein a handle (**35**), which is equipped with operator controls, is disposed on the lifting frame (**11**) at its end opposite the pull-out direction (A).

25. The loading apparatus of claim **24**, wherein the handle (**35**) is attached to the lifting frame (**11**) or to the base structure (**2**) by pivoting or retracting means.

26. The loading apparatus of claim **24**, wherein the handle (**35**) is equipped with an extensible drawbar (**37**), wherein the extension direction of the drawbar (**37**) is oriented obliquely relative to the lifting direction (B), preferably by being inclined slightly in rearward direction.

27. The loading apparatus of claim **26**, wherein the length of the drawbar (**37**) can be varied by a length-adjusting drive, wherein the length-adjusting drive preferably can be inversely coupled phase-wise with the lifting drive.

28. The loading apparatus of claim **1**, wherein the freight carrier (**12**) is provided with a loading platform (**9**), at least one bulk-goods holder or a special retainer, especially as part of an exchangeable attachment.

29. The loading apparatus of claim **1**, wherein the freight carrier (**12**) is provided with suitable retainers for attachment of fastening and/or securing means for the freight.

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A standing table

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Abstract

standing table is disclosed. Standing table according to an embodiment of the top plate and designed; The upper plate and the upper support is supported thereon; The upper support and a lower support disposed on the bottom; It is composed of a pair of link arms cross-rotatably to each other X-shape adapted to allow or block the rotation between the cross arm and the link arms of the cross arm connecting enabling folded between the lower support and the upper support includes the height adjustment unit includes a height adjustment locking device, wherein the cross arms are arranged in pairs on both sides between the upper and lower supports, the height adjustment lock a pair of the operation of the cross-arm separately It may be provided as a pair to operate.

Description

INVENTION-TITLE
Standings table A standing table.
TECHNICAL-FIELD

The subject innovation relates to a standing table, a sitting position is provided to perform work in a comfortable posture in standing as well.
BACKGROUND-ART

Table which can be used as such as a desk or work surface is usually fixed according to the sitting position, the height of conventional roof.

However, the state Sitting for a long time because you can easily get into a sitting position and neck or waist crowd, a fixed height table tops are common inconveniences in use for a long time.

Therefore, the last to be adjusted by the height of the table top while, in the sitting position, and standing type has appeared to perform operations comfortably by using the table as well as in the standing state.

No.-A-10-2012-0129041 has presented an example of a standing table provided to adjust the height of the top plate.
CITATION-LIST
PATENT-LITERATURE
Unexamined Patent Publication No. 10-2012-0129041 call.
DESCRIPTION-OF-EMBODIMENTS

Hereinafter, with reference to the accompanying drawings an embodiment of the subject innovation will be described in detail. The following examples will be presented to fully convey the scope of the present invented to those of ordinary skill in the art the invented. The subject innovation may be embodied in different forms and should not be limited to the embodiments described herein. Description of the drawings are not shown for clarity and parts unrelated to the subject innovation, and the amount of component to aid the understanding can be expressed in somewhat exaggerated.

As shown in Figure 1 to 3, the standing table according to this embodiment is the top plate 1 and the top plate (1) and upper support (2) designed to bear against the upper, upper support (2) provided at the bottom and a lower support (3).

In the drawing the top plate (1), but provided in the form of a square plate as applied to a conventional table, circular, triangular, pentagonal, etc. The form of the top plateThere is no particular limitation, the material of the top plate can also be selected from wood, plastic, metal, various materials such as acrylic. In other words the shape and material of the top plate 1 can be configured with a variety of shapes and materials depending

on the design desired by the producer or the use purpose of the standing table.

Upper support (2) is adapted to support the upper panel (1), a bottom surface, the lower support (3) is located at the upper support (2) to bear against the bottom surface of the bottom area which increases the standing table.

Standings table is preferably used in the state put on another object, such as a desk, but even when placed alone on the floor for purposes such as hyeoptak use is possible.

The upper and lower supports (2, 3) may be provided in the form of a rectangular frame, respectively, the upper support (2) may be provided to allow the lower support to the upper support (3).

Is provided in the form of lower support frame (3) is able to increase the bearing capacity of the floor surface through a substantially disc shape of the base portion (3a) integrally provided on each side edge.

Each receiving portion to increase the bearing capacity of the bottom surface (3a)Bottom, it can be installed, such as the friction member for increasing the friction between the kyubang or base. Lower support (3) can be replaced in the flat plate shape, unlike this embodiment.

The upper and lower supports (2, 3), but may be provided by wood, plastics, various materials such as metals, when considering the rigidity, the material of the upper and lower supports (2, 3) is a metal or reinforced plastics. in may be more appropriate.

The upper panel (1) is height-adjustable lower support unit (3) and upper support (2) according to the height distance between the byeonhwadoem through 10 to be able to be adjusted.

As shown in FIGS. 4-7, the height adjustment unit 10 includes a lower support (3) and upper support (2) cross arm the folded possibly provided to connect between the 20 and the cross arm (20) it may be composed of a pair of cross-linked to each other for rotation X-shaped arm (30, 40).

Cross arm 20 are provided top and bottom supports (2, 3) are arranged in pairs on both sides between the upper and lower supports (2, 3) between them so that they can stably control an interval in a state where the both balanced It can be.

A pair of link arms that make up the cross-arm 20 (30, 40) has an upper end rotatably coupled to the upper support (2) and the lower end is horizontally slidably coupled to the lower support (3) the first link arm 30 and the lower end is separated by the lower support (3), the upper support can be coupled, an upper end turn (2), the second link arm can be combined sliding horizontally on 40 can.

Lower support (3) one side of the first link arm (see Fig. 2, 3) the first horizontal rail (3b) slidably coupled to the lower end is parallel to the (30) can be formed, the first horizontal Rail second horizontal rail side to the upper support (2) corresponding to the position of (3b) is the upper end of the second link arm 40 to be slidably in the horizontal direction (2b) (see Fig. 7) It may be formed.

Therefore, the upper panel (1) has a height according to lifting and folding operation of the cross-arm 20 is able to be varied.

Both ends of the cross arm 20 during folding operation of the upper plate (1) in the horizontal direction by a pair of link arms forming the cross-arm 20 to the position without being moved as the vertical movement (30, 40) position is preferably provided so as to be located on the same line along the vertical direction.

Therefore, the top plate for vertical movement without being moved in the horizontal direction (1) front and rear as is not necessary to secure extra space will have a favorable advantage in terms of space utilization.

In addition, the upper panel (1) so that the cross arm can be made stable in the state without oscillation of the vertical movement (20), the first shock absorber (shock absorber) (50) may be employed.

At this time, to prevent the sliding movement of the link arm being interference in forming the cross-arm 20 (30, 40), and an effective buffering action yet folded over the entire length of the cross-section arm 20First shock absorber, while during the vertical movement of the upper panel (1) to conduct 50 is. To maintain a state close to one link arm A first shock absorber (50) are each rotatably coupled to the cross-section the top and bottom cross section to a side of both ends of the pair of link arms 30 and 40, both ends of the one end of the first shock absorber 50 The other end may be arranged so that more than close to the intersection between the link arms (30, 40).

The reference numeral 21 in Figure 4 to the rotating shaft rotatably connected to a cross between the link arm 30, 40, 51 and 52 at both ends of the first shock absorber 50, each link arm (30, 40) It refers to a rotation pin rotatably coupled coupling.

May also include a height adjustment unit 10 is cross-arm 20 of a pair of link arms that make up the 30, 40 height adjustment lock provided to allow or block the rotation of between 60.

Height adjustment lock 60 includes a first engagement portion 70 and a first fastening provided on the first link arm 30 of the cross-arm 20 of the first and second link arms constituting 30, 40 a second engaging portion provided on the upper support (2) to take in unit 70 (80), a first and a second engagement portion (70,80) is provided to switch the state between the engaging or latching off height adjustment It can be configured to include the lock lever 90.

Height adjustment lock lever 90 includes a top plate from the side height adjustment knob that is substantially parallel to the lateral side edges of the upper panel (1) to the bottom part 91 and a height adjusting grip portion 91 of the upper panel (1) (1) it may be provided with a work portion extending inside 92. The operating unit 92 may be rotatably coupled to a vertical direction in the upper support (2) via a first axis of rotation (93).

The first engagement portion 70 is formed in a flat shape and can be fixed to the top of the first link arm 30, a plurality of first teeth one side circumference of the first engagement portion 70 form a convex surface 72 the first can form teeth 71 having. The first engagement portion 70 are rotated together with the first link arm 30, the first teeth 71 is the upper panel (1) facing the bottom in the raised state, the upper panel (1) as the descent gradually it may be arranged to face the rear side.

The second engagement portion 80 has a first rotational axis 93 andWith the second rotating shaft 81 to the upper support (2) between the first engaging part 70 it can be rotatably coupled. The upper side forms a concave surface in the second engagement portion 80 includes a first engagement portion (70) extending to the bottom of the extension portion 82 side, the second rotation shaft 81, the extension portion 82 a 1, the teeth 72 and to form a plurality of second teeth (85) is provided with a second toothed part (84) so that the engagement.

A second rotary shaft (81) first axis of rotation side to the other 93 side of the second engagement portion 80, the locking bar so as to intersect with the operation unit 92 can take in the operation part 92 of the height adjustment lock lever 90, 83 can be extended.

The second engagement portion 80 has a second tooth side portion 84 through the first elastic member 61 may be provided so that the elastic support towards the first toothed portion 71. The first elastic member 61 may be of a coil spring one end adapted to be supported by the upper support (2), the second engagement portion and the other end to the support (80).

Therefore, when such a structure, the user has to hold by hand the height adjusting grip part 91 of the height adjustment lock lever 90, the upper panel (1) lifted into the rear, first elastic member 61 is compressed as the second axis of rotation (81) locking bar of the second locking part (80) around the 83 that would be heard, while the upper side, the extension portion 82 goes down to the bottom side asIs the coupling state of the second toothed part (84) off for a first tooth portion (71). Therefore, this time with the rotation between cross arm 20 constituting the link arms 30, 40 are allowed the upper panel (1) is a folded operable condition as the lifting height is adjustable through the cross-arm 20.

In this state, when the user tops (1) in a state in which the user is elevated to the desired height in the removal of the force that was applied to the height adjustment knob unit 91, the second axis of rotation by a restoring force of the first elastic member 61 (81) locking bar (83) of the second engagement portion 80 side to the center, whereas that is be down, the extension portion 82 As the lift to the upper second tooth portion 84 of the first tooth back and the engagement in the portion 71, thereby the top plate (1) back to the vertical movement maintains a locked state.

In addition, at least a portion of the first teeth 72 are inclined with respect to the tangent to the first tooth (72a) of one side, a second tooth (72b) of the other side is adapted to be formed in a direction perpendicular to the tangent, at least a portion of the second teeth (85) are formed in a direction perpendicular to the tangent to the first tooth (85a) of one side corresponding to the second tooth (72b) of the first tooth 72 in the meshing state, the first tooth 72 second teeth (85b) of the other side corresponding to the first tooth (72a) it can be arranged inclined with respect to the tangent.

The first and second teeth are configured in this way (72,85) through between the second tooth (85b) of the first tooth (72a) and the second tooth 85 of the first tooth (72) perpendicular to the tangent engaging force between each other is improved, reducing the possibility that the engagement is released between the two in the locked state, the first tooth of the second teeth (72b) and the second tooth 85 of the inclined first tooth 72 to the tangent (85a) between the engagement state of the unlocking operation through between the two are able to be quickly released.

Therefore, a standing table according to this embodiment is able to maintain the upper panel (1), the tops of the raised state, even if the weight of the object to be put on over-(1) a state in which the support for the object securely, the height adjustment unit 10 also it is possible to lock the quick release.

In addition, the pair of link arms that make up the cross-arm 20 (30, 40) between the upper panel (1), the second elastic member to elastically support the link direction between the rising arm (30, 40) (22) (see Fig. 4) may be provided.

A second elastic member (22) includes a central both ends of the hinge shaft in a state sandwiched between the hinge axis (21, 21), a first link arm of the top (30) and each connected to a torsion spring is employed in the second link arm 40 It can be.

The link arm by a second elastic member 22, the first and second link arms through 30 and 40 between the state where the upward direction Tangier of the upper panel (1), height adjustment lock (60, 30, 40) in a state that allows the rotation between even apply a little external force, the raising operation of the upper panel (1) is caused is possible to smoothly raise the upper panel (1) even when the heavy material in the hopper above the upper panel (1). Therefore, the second elastic member 22 performs the role of starting the rising operation of the upper panel (1) is elevated by the link arms (30, 40), the first shock absorber in a state of being allowed to rotate between 5 It is.

Cross arm 20 may be arranged in pairs on both sides between the upper panel (1) upper and lower supports to support the vertical movement of a stable (2, 3).

And height adjustment lock 60 for restricting the rotation of the cross arm (20) is provided as a pair so as to

individually operate the operations of the cross arm 20, height adjustment of the respective height adjusting lock lever 90, Handle portion 91 may be arranged in the upper panel (1) both sides of the bottom so as to be operable at the same time with both hands.

This height adjusting unit 10 only allows the rotation of one because it has a pair of the structure to be operated separately by a cross arm (20) in height to correspond to the adjustment lock (60), one cross-arm 20 limiting the height of the variable of the upper panel (1) in the state, and a pair of height adjustment knob unit 91 with both hands to manipulate the pair of rotating the upper plate only when permitted with the cross-arm 20 at the same time (1) height are capable of being varied. Therefore, according to this embodiment, since the hand of the user during the vertical movement of the upper panel (1) the upper support (2) and the lower support (3) can be almost completely prevented from being sandwiched between, the lifting of the upper panel (1) it is possible to ensure sufficient stability of the.

Furthermore standing table may be arranged to further comprise a tilt control unit 100 to be provided to the variable inclination of the top plate (1).

First, the top plate (1) To this end may be rotatably coupled to the upper support (2) through the front hinge member 110 when the front. Therefore, the upper panel (1) is able to be supported in a rotatable state in the upper upper support (2) hinged to the front in a state where the upper support (2).

And as shown in Figures 8-11, the inclination adjustment unit 100 and the latch 120, which is located on the upper panel (1) a bottom to elastically supported in the direction to increase the inclination of the upper panel (1), the latch stages a plurality of first hook groove disposed to take (130a, 130b, 130c) of the holding plate 130 and fixed to the rear upper panel (1) to a plurality of first hook groove (130a, 130b, 130c), such as a plurality of second hook groove (140a) arranged side by side with a distance ofProvided by a second hook groove (140a) have a first hook groove (130a, 130b, 130c) and the matching state in the alignment is possible to holding plate 130 to slidably mounting the slide member 140 and, It may be of the sliding member 140 to include the pressing means 150 is provided so as to slide in the opposite direction to the pressing direction of the resilient support of the latch 120. Here it means that the latch 120 is to take with the first and second hook groove that is arranged in a matched state in which the first and second hook groove.

Latch 120 is substantially hook horizontally disposed hanger rod to take the groove 121, the hook rod 121 across the vertically extending pair of which includes a support bar 122 to provide a 'U-shaped It can be. The upper support (2) inside for the installation of the latch 120 may be fixed to the bracket 129 is installed, the latch 120 is both the support pole 122, the fitting protrusion (122a) is fixed extending laterally to the tip It can be fixed to the fixing bracket 129 in a state of being rotatably coupled to the bracket 129. Latch 120 may be at least one of the fitting protrusions so that the elastic support in the direction to increase the inclination of the top plate (1), (122a), the third elastic member (not shown) are installed, the third elastic member (not shown) This is in a state fitted in the center fitting protrusion (122a), one end may be provided with a torsion spring fixed to the support bar 122 and the other end of the fixed latch 120 to a fixed bracket (129).

Holding plate 130 has a screw or the likeIt can include a top plate 131 and a top plate 131, one pair parallel to the vertically extending on either side of the side plate 132 is fastened to the back surface of the upper panel (1) via a fastening member. The side plate portions 132 may extend back and forth slightly and hold the top plate (1), said first hook groove (130a, 130b, 130c) is in the longitudinal direction of the side plate portions 132 of each side plate 132 It may be formed so as to be spaced a predetermined interval. In the case of this embodiment the first hook groove (130a, 130b, 130c) are formed on each side plate portion 3 (132). A first hook groove (130a, 130b, 130c) of claim 1 (130a) and the third group (130c) and the first and third set of sides along the sliding direction of the sliding member (140) (130a, 130c) between the It can be divided into the second group (130b) which is located on.

And is a sliding member 140 may be provided to a pair of side plates 132, side plates 132, the sliding plate is arranged in parallel with a pair of (141) between the. A pair of sliding plate 141 may be slidably fastened in

the longitudinal direction of the holding plate 130 to the top plate 131 of the holding plate 130 is in a connected state.

Each sliding plate 141 has a plurality of second hook groove (140a) of the first hook groove (130a, 130b, 130c) may be formed in the same distance as the distance between. A second hook groove (140a) may be provided two on each sliding plate 141. In the case of this embodiment the hook rod 121 is the first hook to take the stable home of the latch (120) (130a, 130b, 130c) and the side plate portion 132 of the provided holding plate 130, a second hook groove (140a) was arranged a sliding plate (1410) to a pair of the sliding member 140 is formed, a side plate portion 132 and the sliding plate 141 are each one also can be configured.

And pressing means (150) is inclined for adjusting the locking lever 160 and a tilt adjusting lock lever 160, an operation as according to the sliding member 140, the latch 120 of the elastic supporting direction and in the opposite direction so disposed link member wheat 170 may be configured to include.

Tilt adjusting lock lever 160 and the longitudinal direction and vertically rotatably coupled to the side plate portion 132 in a direction crossing the operating portion 161 of the holding plate 130, the operating portion 161 bent extending from an end and a connecting portion 162, connecting portion 162 may be bent once again been extended to include an operation section 161 provided in parallel to the handle portion and the tilt adjustment (163). The tilt adjusting the locking lever 160 can be installed in the holding plate 130, so that the tilt adjustment knob unit 163 is not resilient to the top plate (1) bottom through fourth elastic members (not shown). The fourth elastic member (not shown) is incident on one end and the other end of the operation section 161 may be provided with a torsion spring that is supported by the holding plate 130.

And a link member 170 has one end fixed to the operation unit 161 and operation unit first link adapted to rotate upon rotation of 161, 171, the sliding plate of the pair, and to moderate the bent state 141 is fixed between the end portions can be configured to correspond to the first link (171) to a second link 172 rotatably coupled to the first link (171). Sliding plate 141 pushed by the second link 172, the fixing protrusion that extends on both sides (172a), the first link in a state of being fixed to the sliding plate 141 as secured to a sliding plate 141, 171 to it is possible to slide in the forward direction.

Referring to the reclining operation of the tilt control unit 100 with the top plate (1) is as follows.

9 shows hanger rod of the latch 120, 121 is mutually matched first hook groove structure of the state caught in the second group (130b) and the second hook groove (140a) shown in (130a, 130b, 130c) It is.

If the condition further increase Here the slope of the upper panel (1), the user is lifted, as shown in Figure 10, the tilt adjustment knob portion 163 of the tilt adjustment lock lever 160 toward the rear upper panel (1) It is.

Accordingly, as becomes between the first link 171 and the first and second link by the rotation of the (171,172) going on the sliding member 140 is to move in the direction of the arrow together with the second link (172). Therefore, in this state, parallel to the first and second hook was grooves (130b, 140a) as the position is shifted between the first and second hook hook rod 121. The first and second hook was hanging in the home home (130b, 140a) is exited from.

The conditions are thereby in the user changes the tilt of the rear upper panel (1) down to the lower portion being lifted to the top of the upper panel (1), wherein the upper panel (1) when the gradient is built up in the forward direction becomes higherLatch 120, a third elastic member (not shown) for through-built direction to move in, and the upper panel (1), the slope is low, so that the lay quality when the latch 120 is also holding plate 130 on by being pressed laid It becomes.

When removing the force that was applied to the tilt adjustment knob unit 163 since the tilt adjusting lock

lever 160, as shown in Fig. 11, the fourth sliding through the restoring force of the elastic member (not shown), member 140 and a second hook as the reverse groove (140a) of the assisting plate 3 of the first hook groove along the slope change in the (130a, 130b, 130c) of the first group (130a) or arranged in three groups (130c) and a state in which matching being able to be, so that the hook rod 121 is kept inclined in the first and second hooks of the top plate as the support takes the control groove (1) the matching again.

In the case of Figure 11, the hook bar (121) being supported hanging in a first hook groove (130a, 130b, 130c) the first group of (130a) the second hook which matches the groove (140a), the top plate with respect to Figure 9 (1) it shows a state in which adjustment so as to have a larger inclination.

And outside of the slope adjustment knob portion 163 is the upper panel (1)It is located on the inside slope adjustment knob unit 163, the top plate of a portion corresponding to the position of (1) the operation hole to catch put his hand from an upper slope adjustment knob unit 163, the top plate (3) (1a) it may be provided to be through.

Therefore, by using the tilt control unit 100 to be varied and character to the inclination of the upper panel (1), the user is inserted into the operation hole (1a) and their one hand from above the top plate (1) slope adjustment knob in a state it is possible to operate by holding the section 163. At this time, since the user has inclined adjustment knob portion 163 for gripping with one hand and can take walking the upper panel (3), the inclination of the top plate (1) holding the upper plate in the hand (1) can be adjusted safely.

In addition to the reclining operation of the upper roof can be made stable in the absence of vibration 1 and the second shock absorber provided between a fixed bracket (129) (shock absorber) (180) may be further provided.

The second shock absorber 180 is coupled to a top end (1) is coupled to one side of the bottom retaining bracket 129. The other end will absorb the impact of the tilt operation of the upper bars (1).

In the above described and illustrated with respect to specific embodiments. However, the subject innovation can be carried out changed in various ways as much is not limited to the above embodiment, if the designed one of ordinary skill in the art without departing from the subject matter of the technical features of the invented as described in the claims below there will be.
REFERENCE-SIGNS-LIST

1: The upper 1a:. Operating hole
2: upper support 3: lower support
10: Height adjustment unit 20: Cross Cancer
30: first link arm 40: second link arm
50: The first shock absorber 60: Height adjustment lock
70: The first engagement portion 72: first tooth
80: The second engagement portion 85: second tooth
90: 91 height adjustment lock lever height adjustment knob portion
100: tilt control unit 120: latch
130: locking plate 140: a sliding member
150: pressure means 160: tilt adjustment lock lever
163: tilt adjustment knob portion 170: the link member
180: The second shock absorber .

Claims

And tops; The upper plate and the upper support is supported thereon; The upper support and a lower support disposed on the bottom; It is composed of a pair of link arms cross-rotatably to each other X-shape

adapted to allow or block the rotation between the cross arm and the link arms of the cross arm connecting enabling folded between the lower support and the upper support It includes the height adjustment unit comprises a height adjustment and locking device,
The cross arms are arranged in pairs on both sides between the upper and lower support,
The height adjustment lock is provided as a pair to operate the pair of the operation of the cross-arm separately,
The height adjustment lock the first engaging portion and the first engaging portion provided on one of the link arms of the pair constituting the cross armAnd a second engaging portion provided on the upper support to take , of the first and comprises a second engagement portion between the engaging or releasing the height adjustment lock lever provided with jam to be released,
In the first engagement portion is provided with a plurality of first teeth binary curvature to be convex to form a first tooth portion and the second engagement portion, the concave curvature so that the plurality of second teeth engaged with the formation between the first tooth Jin second cogs and additional provision,
The first tooth is inclined relative to the first tooth surface is tangent to the side, and adapted to be formed including a vertical direction with respect to the second tooth surface is tangent to the other side,
The second tooth is formed in a vertical direction with respect to the first tooth surface is tangent to the side corresponding to the second tooth surface of the first tooth, the second tooth surface is tangent to the other side corresponding to the first tooth of the second teeth standing table including the provided inclined with respect.
According to claim 1,
A pair of the height adjustment lock, respectively, including a height adjustment knob is adapted to be operated by hand,
A pair of standing table disposed on both sides of the bottom of the top plate to the operation unit with both hands at the same time as the height adjustment knob.
Delete.
According to claim 1,
The cross arm is provided with a pair of cross-connected to enable the rotation of the intermediate link arm,
Is the link between the pair of arms forming the cross-arm doedoe connected via a shock absorber (shock absorber), are disposed at both ends of the shock absorber is set to more than the other end adjacent to the cross-section,
A pair of the link arm between a standing table supported elastically by the elastic member in a direction to increase in the upper plate forming the cross-arm.
And tops; The upper plate and the upper support is supported thereon; The upper support and a lower support disposed on the bottom; It is composed of a pair of link arms cross-rotatably to each other X-shape adapted to allow or block the rotation between the cross arm and the link arms of the cross arm connecting enabling folded between the lower support and the upper support It includes the height adjustment unit comprises a height adjustment and locking device,
The cross arms are arranged in pairs on both sides between the upper and lower support,
The height adjustment lock is provided as a pair to operate the pair of the operation of the cross-arm separately,
Wherein further comprising a tilt control unit provided to vary the inclination of the top plate for the upper support,
Once the top plate is rotatably coupled to the upper support,
The tilt control unit, or allow rotation of the upper plate for the upper supportThe tilt adjustment lock lever is positioned on the back the top and having a slope adjustment knob to block, to get into the hands from above the top part to the slope adjustment knob passing through the top plate corresponding to the slope adjustment knob unit location standing table including the operation hole.
And tops; The upper plate and the upper support is supported thereon; The upper support and a lower support disposed on the bottom; It is composed of a pair of link arms cross-rotatably to each other X-shape adapted to allow or block the rotation between the cross arm and the link arms of the cross arm connecting enabling folded between the lower support and the upper support It includes the height adjustment unit comprises a height adjustment and locking device,
The cross arms are arranged in pairs on both sides between the upper and lower support,

The height adjustment lock is provided as a pair to operate the pair of the operation of the cross-arm separately,
Wherein further comprising a tilt control unit provided to vary the inclination of the top plate for the upper support,
Once the top plate is rotatably coupled to the upper support,
To adjust the tilt unit elastically supporting the roof in the direction of the slope is increasedWith the latch located at the bottom of the top plate, the latch is in stages a plurality of the holding plate and secured to the bottom the top and a first hook groove provided can take a side by side the plurality of first hook groove like gap the second hook groove to a plurality of the second hook groove disposed are a slidably mounted slide member to the holding plate to enable the alignment in a state of being matched with the first hook groove, wherein the sliding member -standing table including a pressing means provided to press the elastic support in the opposite direction of the latch.

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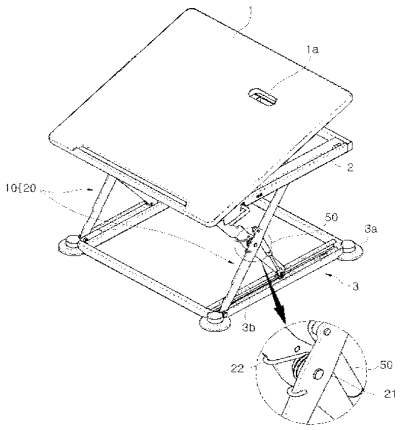
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(54) 고안의 명칭 **스탠딩 테이블**

(57) 요 약

스탠딩 테이블이 개시된다. 본 고안의 실시 예에 따른 스탠딩 테이블은 상판과; 상기 상판이 상부에 지지되는 상부지지대와; 상기 상부지지대 하부에 마련된 하부지지대와; 상호 X자 형태로 회전 가능하게 교차된 한 쌍의 링크암으로 구성되어 상기 하부지지대와 상부지지대 사이를 접철 가능하게 연결하는 크로스암과, 상기 크로스암의 링크암 사이의 회전을 허용 또는 차단하도록 마련된 높이조절용 잠금장치를 구비하는 높이조절유닛을 포함하고, 상기 크로스암은 상기 상부 및 하부지지대 사이의 양측에 한 쌍으로 마련되며, 상기 높이조절용 잠금장치는 한 쌍의 상기 크로스암의 동작을 개별적으로 조작하도록 한 쌍으로 마련될 수 있다.

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명 세 서

청구범위

청구항 1

상판과; 상기 상판이 상부에 지지되는 상부지지대와; 상기 상부지지대 하부에 마련된 하부지지대와; 상호 X자 형태로 회전 가능하게 교차된 한 쌍의 링크암으로 구성되어 상기 하부지지대와 상부지지대 사이를 접철 가능하게 연결하는 크로스암과, 상기 크로스암의 링크암 사이의 회전을 허용 또는 차단하도록 마련된 높이조절용 잠금장치를 구비하는 높이조절유닛을 포함하고,

상기 크로스암은 상기 상부 및 하부지지대 사이의 양측에 한 쌍으로 마련되며,

상기 높이조절용 잠금장치는 한 쌍의 상기 크로스암의 동작을 개별적으로 조작하도록 한 쌍으로 마련되고,

상기 높이조절용 잠금장치는 상기 크로스암을 구성하는 한 쌍의 상기 링크암 중 어느 하나에 마련된 제1걸림부와, 상기 제1걸림부에 걸릴 수 있도록 상기 상부지지대에 마련된 제2걸림부와, 상기 제1 및 제2걸림부 사이를 걸림 또는 걸림해제 해제 시킬 수 있도록 마련된 높이조절용 잠금레버를 포함하며,

상기 제1걸림부에는 복수의 제1톱니가 형성되도록 볼록하게 곡률진 제1톱니부가 마련되고, 상기 제2걸림부에는 상기 제1톱니 사이에 치합되는 복수의 제2톱니가 형성되도록 오목하게 곡률진 제2톱니부가 마련되며,

상기 제1톱니는 일측의 제1치면이 접선에 대하여 경사지고, 타측의 제2치면이 접선에 대하여 수직 방향으로 형성되도록 마련된 것을 포함하고,

상기 제2톱니는 상기 제1톱니의 제2치면에 대응하는 일측의 제1치면이 접선에 대하여 수직 방향으로 형성되고, 상기 제2톱니의 제1치면에 대응하는 타측의 제2치면이 접선에 대하여 경사지도록 마련된 것을 포함하는 스탠딩 테이블.

청구항 2

제 1항에 있어서,

한 쌍의 상기 높이조절용 잠금장치는 각각 높이조절용 손잡이부를 포함하여 손으로 조작되도록 마련되고,

한 쌍의 상기 높이조절용 손잡이부는 양손으로 동시에 조작할 수 있도록 상기 상판 저부 양측에 배치된 스탠딩 테이블.

청구항 3

삭제

청구항 4

제 1항에 있어서,

상기 크로스암은 한 쌍의 상기 링크암의 중도가 회전 가능하게 연결된 교차부를 구비하고,

상기 크로스암을 구성하는 한 쌍의 상기 링크암 사이는 쇼크업소버(shock absorber)를 통해 연결되되, 상기 쇼크업소버의 양단은 일단이 타단보다 상기 교차부에 더 인접하도록 배치되고,

상기 크로스암을 구성하는 한 쌍의 상기 링크암 사이는 상기 상판이 상승하는 방향으로 탄성부재를 통해 탄력적으로 지지된 스탠딩 테이블.

청구항 5

상판과; 상기 상판이 상부에 지지되는 상부지지대와; 상기 상부지지대 하부에 마련된 하부지지대와; 상호 X자 형태로 회전 가능하게 교차된 한 쌍의 링크암으로 구성되어 상기 하부지지대와 상부지지대 사이를 접철 가능하게 연결하는 크로스암과, 상기 크로스암의 링크암 사이의 회전을 허용 또는 차단하도록 마련된 높이조절용 잠금

장치를 구비하는 높이조절유닛을 포함하고,

상기 크로스암은 상기 상부 및 하부지지대 사이의 양측에 한 쌍으로 마련되며,

상기 높이조절용 잠금장치는 한 쌍의 상기 크로스암의 동작을 개별적으로 조작하도록 한 쌍으로 마련되고,

상기 상부지지대에 대해 상기 상판의 경사를 가변시키도록 마련된 경사조절유닛을 더 포함하되,

상기 상판은 일단이 상기 상부지지대에 회전 가능하게 결합되고,

상기 경사조절유닛은 상기 상부지지대에 대한 상기 상판의 회전을 허용 또는 차단하도록 경사조절용 손잡이부를 구비하여 상기 상판 배면에 위치되는 경사조절용 잠금레버와, 상기 경사조절용 손잡이부를 상기 상판 상부로부터 손을 넣어 잡을 수 있도록 상기 경사조절용 손잡이부 위치에 대응하는 상기 상판을 관통하는 조작구멍을 포함하는 스탠딩 테이블.

청구항 6

상판과; 상기 상판이 상부에 지지되는 상부지지대와; 상기 상부지지대 하부에 마련된 하부지지대와; 상호 X자 형태로 회전 가능하게 교차된 한 쌍의 링크암으로 구성되어 상기 하부지지대와 상부지지대 사이를 접철 가능하게 연결하는 크로스암과, 상기 크로스암의 링크암 사이의 회전을 허용 또는 차단하도록 마련된 높이조절용 잠금장치를 구비하는 높이조절유닛을 포함하고,

상기 크로스암은 상기 상부 및 하부지지대 사이의 양측에 한 쌍으로 마련되며,

상기 높이조절용 잠금장치는 한 쌍의 상기 크로스암의 동작을 개별적으로 조작하도록 한 쌍으로 마련되고,

상기 상부지지대에 대해 상기 상판의 경사를 가변시키도록 마련된 경사조절유닛을 더 포함하되,

상기 상판은 일단이 상기 상부지지대에 회전 가능하게 결합되고,

상기 경사조절유닛은 상기 상판을 경사가 높아지는 방향으로 탄성지지 하도록 상기 상판 저부에 위치하는 걸쇠와, 상기 걸쇠가 단계적으로 걸릴 수 있게 마련된 복수의 제1걸이홈을 구비하여 상기 상판 배면에 고정된 걸림판과, 상기 복수의 제1걸이홈과 같은 간격으로 나란히 배치된 복수의 제2걸이홈을 구비하여 상기 제2걸이홈들이 상기 제1걸이홈들과 일치된 상태로 정렬이 가능하도록 상기 걸림판에 슬라이딩 가능하게 장착된 슬라이딩부재와, 상기 슬라이딩부재를 상기 걸쇠의 탄성지지방향과 반대방향으로 가압하도록 마련된 가압수단을 포함하는 스탠딩 테이블.

고안의 설명

기 술 분 야

[0001] 본 고안은 앉은 자세는 물론 서 있는 자세에서도 편안하게 작업을 수행할 수 있도록 마련된 스탠딩 테이블에 관한 것이다.

배 경 기 술

[0002] 책상이나 작업대 등으로 사용이 가능한 테이블은 통상 상판의 높이가 앉은 자세에 맞게 고정된 것이 일반적이다.

[0003] 그러나 앉은 자세로 장시간 앉아 있는 상태에서는 목이나 허리 등에 쉽게 무리가 갈 수 있기 때문에, 상판 높이가 고정된 테이블은 장시간 사용하기에 불편한 점이 많았다.

[0004] 따라서 최근 테이블 중에는 상판의 높낮이를 조절할 수 있도록 함으로써, 앉은 자세에서는 물론 서 있는 상태에서도 테이블을 이용하여 작업을 편안하게 수행할 수 있도록 한 스탠딩 타입이 등장하고 있다.

[0005] 공개특허공보 제10-2012-0129041호는 상판의 높낮이를 조절할 수 있도록 마련된 스탠딩 테이블의 일례를 제시하고 있다.

선행기술문헌

특허문헌

[0006] (특허문헌 0001) 공개특허공보 제10-2012-0129041호

고안의 내용

해결하려는 과제

[0007] 그러나 상기 공보에 개시된 스탠딩 테이블은 상판이 수직방향으로 세워진 지지대에 상하로 슬라이딩 가능한 상태에서 볼트로 고정되어 있고, 이에 따라 지지대에 상판의 높낮이를 조절하기 위해 볼트를 풀고 다시 조여야 하므로, 테이블의 이용도중에 상판의 높낮이를 자주 조절하기가 어려웠다.

[0008] 또한 지면과 평행한 상태의 상판을 단순히 높낮이만 조절할 수 있게 마련된 종래 스탠딩 테이블은 경사를 갖는 지지면은 제공을 할 수가 없어 다양한 작업시 편리하게 활용되는데 한계가 있었다.

[0009] 본 고안의 실시 예는 상판의 높낮이를 간편하게 조절할 수 있도록 마련된 스탠딩 테이블을 제공하는 것이다.

[0010] 또한 상판의 높이 조절에 따른 안전성을 충분히 확보할 수 있도록 마련된 스탠딩 테이블을 제공하는 것이다.

[0011] 또한 상판의 높이는 물론 경사까지 조절할 수 있도록 마련되어 다양한 작업에 보다 편리하게 사용될 수 있도록 마련된 스탠딩 테이블을 제공하는 것이다.

[0012] 또한 상판의 높이 또는 경사 조절에 따른 동작 효율성을 향상시킬 수 있도록 스탠딩 테이블을 제공하는 것이다.

과제의 해결 수단

[0013] 본 고안의 일 측면에 따르면, 상판과; 상기 상판이 상부에 지지되는 상부지지대와; 상기 상부지지대 하부에 마련된 하부지지대와; 상호 X자 형태로 회전 가능하게 교차된 한 쌍의 링크암으로 구성되어 상기 하부지지대와 상부지지대 사이를 접철 가능하게 연결하는 크로스암과, 상기 크로스암의 링크암 사이의 회전을 허용 또는 차단하도록 마련된 높이조절용 잠금장치를 구비하는 높이조절유닛을 포함하고, 상기 크로스암은 상기 상부 및 하부지지대 사이의 양측에 한 쌍으로 마련되며, 상기 높이조절용 잠금장치는 한 쌍의 상기 크로스암의 동작을 개별적으로 조작하도록 한 쌍으로 마련된 스탠딩 테이블이 제공될 수 있다.

[0014] 한 쌍의 상기 높이조절용 잠금장치는 각각 높이조절용 손잡이부를 포함하여 손으로 조작되도록 마련되고, 한 쌍의 상기 높이조절용 손잡이부는 양손으로 동시에 조작할 수 있도록 상기 상판 저부 양측에 배치될 수 있다.

[0015] 상기 높이조절용 잠금장치는 상기 크로스암을 구성하는 한 쌍의 상기 링크암 중 어느 하나에 마련된 제1걸림부와, 상기 제1걸림부에 걸릴 수 있도록 상기 상부지지대에 마련된 제2걸림부와, 상기 제1 및 제2걸림부 사이를 걸림 또는 걸림 해제 시킬 수 있도록 마련된 높이조절용 잠금레버를 포함하며, 상기 제1걸림부에는 복수의 제1톱니가 형성되도록 볼록하게 곡률진 제1톱니부가 마련되고, 상기 제2걸림부에는 상기 제1톱니 사이에 치합되는 복수의 제2톱니가 형성되도록 오목하게 곡률진 제2톱니부가 마련되며, 상기 제1톱니는 일측의 제1치면이 접선에 대하여 경사지고, 타측의 제2치면이 접선에 대하여 수직 방향으로 형성되도록 마련된 것을 포함하고, 상기 제2톱니는 상기 제1톱니의 제2치면에 대응하는 일측의 제1치면이 접선에 대하여 수직 방향으로 형성되고, 상기 제2톱니의 제1치면에 대응하는 타측의 제2치면이 접선에 대하여 경사지도록 마련될 수 있다.

[0016] 상기 크로스암을 구성하는 한 쌍의 상기 링크암 사이는 제1쇼크업소버(shock absorber)를 통해 연결되되, 상기 제1쇼크업소버의 양단은 일단이 타단보다 상기 교차부에 더 인접하도록 배치되고, 상기 크로스암을 구성하는 한 쌍의 상기 링크암 사이는 상기 상판이 상승하는 방향으로 탄성부재를 통해 탄력적으로 지지될 수 있다.

[0017] 상기 스탠딩 테이블은 상부지지대에 대해 상기 상판의 경사를 가변시키도록 마련된 경사조절유닛을 더 포함하되, 상기 상판은 일단이 상기 상부지지대에 회전 가능하게 결합되고, 상기 경사조절유닛은 상기 상부지지대에 대한 상기 상판의 회전을 허용 또는 차단하도록 경사조절용 손잡이부를 구비하여 상기 상판 배면에 위치되는 경사조절용 잠금레버와, 상기 경사조절용 손잡이부를 상기 상판 상부로부터 손을 넣어 잡을 수 있도록 상기 경사조절용 손잡이부 위치에 대응하는 상기 상판을 관통하는 조작구멍을 포함할 수 있다.

[0018] 상기 스탠딩 테이블은 상부지지대에 대해 상기 상판의 경사를 가변시키도록 마련된 경사조절유닛을 더 포함하되, 상기 상판은 일단이 상기 상부지지대에 회전 가능하게 결합되고, 상기 경사조절유닛은 상기 상판을

경사가 높아지는 방향으로 탄성지지 하도록 상기 상판 저부에 위치하는 결쇠와, 상기 결쇠가 단계적으로 걸릴 수 있게 마련된 복수의 제1걸이홈을 구비하여 상기 상판 배면에 고정된 걸림판과, 상기 복수의 제1걸이홈과 같은 간격으로 나란히 배치된 복수의 제2걸이홈을 구비하여 상기 제2걸이홈들이 상기 제1걸이홈들과 일치된 상태로 정렬이 가능하도록 상기 걸림판에 슬라이딩 가능하게 장착된 슬라이딩부재와, 상기 슬라이딩부재를 상기 결쇠의 탄성지지방향과 반대방향으로 가압하도록 마련된 가압수단을 포함할 수 있다.

고안의 효과

[0019] 본 고안의 실시 예에 따른 스탠딩 테이블은 높이조절용 잠금레버를 손으로 조작하는 방식을 통해 상판의 높이를 간편하게 조절할 수 있다.

[0020] 또 본 고안의 실시 예에 따른 스탠딩 테이블은 상판의 높이 조절을 위한 한 쌍의 크로스암이 한 쌍의 높이조절용 손잡이부에 의해 개별적으로 동작하게 되어 상판의 높이조절과정에서 양손이 모두 높이조절용 손잡이부를 잡은 상태를 유지하도록 함으로써, 상판의 승강동작시 이용자의 손이 상부지지대와 하부지지대 사이에 끼게 되는 것을 거의 완벽하게 방지하여 상판의 높이 조절에 따른 안전성을 충분히 확보할 수 있다.

[0021] 또 본 고안의 실시 예에 따른 스탠딩 테이블은 높이조절유닛과 경사조절유닛에 의해 상판의 높이는 물론 경사까지 조절할 수 있게 되어 다양한 작업에 보다 편리하게 사용될 수 있다.

도면의 간단한 설명

[0022] 도 1은 본 고안의 일 실시 예에 따른 스탠딩 테이블의 사시도로, 상판이 저부로 하강된 상태를 나타낸 것이다.

도 2는 도 1에서 상판이 상승된 상태를 나타낸 것이다.

도 3은 도 2에서 상판의 경사가 세워진 상태를 나타낸 것이다.

도 4는 도 2의 측면도이다.

도 5는 도 2의 측면도로, 높이조절용 잠금장치의 구조를 보이기 위해 상부지지대의 일부가 제거되도록 한 것이다.

도 6은 높이조절용 잠금장치에 마련된 제1톱니와 제2톱니 사이의 걸림구조를 확대 도시한 것이다.

도 7은 도 5의 상태에서 상판이 하강된 상태를 나타낸 것으로, 높이조절용 잠금장치의 구조를 보이기 위해 상부지지대와 크로스암의 일부가 제거되도록 한 것이다.

도 8은 본 고안의 일 실시 예에 따른 스탠딩 테이블의 저면 사시도이다.

도 9는 본 고안의 일 실시 예에 따른 스탠딩 테이블에서 경사조절유닛 쪽 구조를 발취 도시한 측면도이다.

도 10은 도 9에서 경사조절용 잠금레버를 조작하여 경사조절유닛의 잠금이 해제된 상태를 나타낸 것이다.

도 11은 도 10의 상태에서 상판의 경사가 커지도록 조절된 상태를 나타낸 것이다.

고안을 실시하기 위한 구체적인 내용

[0023] 이하에서는 본 고안의 실시 예를 첨부 도면을 참조하여 상세히 설명한다. 이하의 실시 예는 본 고안이 속하는 기술분야에서 통상의 지식을 가진 자에게 본 고안의 사상을 충분히 전달하기 위해 제시하는 것이다. 본 고안은 여기서 제시한 실시 예만으로 한정되지 않고 다른 형태로 구체화될 수도 있다. 도면은 본 고안을 명확히 하기 위해 설명과 관계 없는 부분의 도시를 생략하고, 이해를 돕기 위해 구성요소의 크기를 다소 과장하여 표현할 수 있다.

[0024] 도 1 내지 도 3에 도시된 바와 같이, 본 실시 예에 따른 스탠딩 테이블은 상판(1)과, 상판(1)이 상부에 지지되도록 마련된 상부지지대(2)와, 상부지지대(2) 하부에 마련된 하부지지대(3)를 구비한다.

[0025] 도면에서 상판(1)은 통상의 테이블에 적용되는 것과 같이 사각의 판 형태로 마련되어 있으나, 원형, 삼각, 오각 등 상판의 형태에는 특별한 제한이 없으며, 상판의 재질 역시 나무, 플라스틱, 금속, 아크릴 등의 다양한 소재로부터 선택될 수 있다. 즉 상판(1)의 형상과 재질은 스탠딩 테이블의 이용 목적이나 제작자가 원하는 디자인에 따라 다양한 형상과 재질을 통해 구성될 수 있다.

[0026] 상부지지대(2)는 상판(1) 저면을 지지하도록 마련되며, 하부지지대(3)는 스탠딩 테이블이 놓여지는 곳의 바닥면

에 지지되도록 상부지지대(2) 저부에 위치하게 된다.

[0027] 스탠딩 테이블은 책상과 같은 다른 물건 위에 올려 놓은 상태에서 이용하는 것이 바람직하지만, 단독으로 바닥에 놓은 상태에서도 협탁 등과 같은 용도로 이용은 가능하다.

[0028] 상부 및 하부지지대(2,3)는 각각 사각의 틀 형태로 마련될 수 있으며, 상부지지대(2)는 하부지지대(3) 상부에 지지가 가능하도록 마련될 수 있다.

[0029] 틀 형태로 마련되는 하부지지대(3)는 각 모서리 쪽에 일체로 마련된 대략 원판 형태의 받침부(3a)를 통해 바닥면에 대한 지지력을 높일 수 있게 된다.

[0030] 바닥면에 대한 지지력을 높일 수 있도록 각 받침부(3a) 저면에는 큐방이나 바닥면과의 마찰을 증대시키기 위한 마찰부재 등이 설치될 수 있다. 하부지지대(3)는 본 실시 예와 달리 평판 형태로도 대체될 수 있다.

[0031] 상부 및 하부지지대(2,3)는 나무, 플라스틱, 금속 등의 다양한 소재를 통해 마련될 수 있으나, 강성을 고려했을 때, 상부 및 하부지지대(2,3)의 소재로는 금속이나 강화 플라스틱 등의 더욱 적합할 수 있다.

[0032] 상판(1)은 높이조절유닛(10)을 통해 하부지지대(3)와 상부지지대(2) 사이의 간격이 변화됨에 따라 높낮이가 조절될 수 있게 된다.

[0033] 도 4 내지 도 7에 도시된 바와 같이, 높이조절유닛(10)은 하부지지대(3)와 상부지지대(2) 사이를 접철 가능하게 연결하도록 마련된 크로스암(20)을 포함하고, 크로스암(20)은 상호 X자 형태로 회전 가능하게 교차된 한 쌍의 링크암(30,40)으로 구성될 수 있다.

[0034] 크로스암(20)은 상부 및 하부지지대(2,3) 사이의 양측에 한 쌍으로 배치되어 상부 및 하부지지대(2,3) 사이가 양쪽이 균형을 이룬 상태에서 안정적으로 간격조절이 가능하도록 마련될 수 있다.

[0035] 크로스암(20)을 구성하는 한 쌍의 링크암(30,40)은 상부 일단이 상부지지대(2)에 회전 가능하게 결합되고 하부 타단이 하부지지대(3)에 수평방향으로 슬라이딩 가능하게 결합된 제1링크암(30)과, 하부 일단이 하부지지대(3)에 회전 가능하게 결합되고 상부 타단이 상부지지대(2)에 수평방향으로 슬라이딩 가능하게 결합된 제2링크암(40)으로 구분될 수 있다.

[0036] 하부지지대(3) 일측에는 제1링크암(30)의 하부 쪽 단부가 수평방향으로 슬라이딩 가능하게 결합되도록 제1수평레일(3b)(도 2,3 참조)이 형성될 수 있고, 제1수평레일(3b)의 위치에 대응하는 상부지지대(2)의 일측으로는 제2링크암(40)의 상부 쪽 단부가 수평방향으로 슬라이딩 가능하게 결합되도록 제2수평레일(2b)(도 7 참조)이 형성될 수 있다.

[0037] 따라서 상판(1)은 크로스암(20)들의 접철 동작에 따라 승강하면서 높이가 가변될 수 있게 된다.

[0038] 크로스암(20)의 접철동작시 상판(1)이 수평방향으로는 이동됨이 없이 그 위치 그대로 승강 동작할 수 있도록 크로스암(20)을 구성하는 한 쌍의 링크암(30,40)의 양단의 위치는 수직방향을 따라 동일선상에 위치하도록 마련되는 것이 바람직하다.

[0039] 따라서 수평방향으로 이동됨이 없이 승강 동작하는 상판(1)은 전후방으로 별도의 공간을 확보할 필요가 없게 되어 공간활용도 측면에서도 유리한 이점을 갖게 된다.

[0040] 또한 상판(1)의 승강동작이 진동 없는 상태에서 안정적으로 이루어질 수 있도록 크로스암(20)에는 제1 쇼크업소버(shock absorber)(50)가 채용될 수 있다.

[0041] 이때 크로스암(20)을 구성하는 링크암(30,40)의 슬라이딩 동작에 간섭됨이 없도록 하고, 또 크로스암(20)의 접철 구간 전 구간에 걸쳐 효과적인 완충작용을 수행할 수 있도록 하면서도 상판(1)의 승강 동작시 제1 쇼크업소버(50)가 한 쪽 링크암에 인접한 상태를 유지할 수 있도록 제1쇼크업소버(50)는 양단이 한 쌍의 링크암(30,40)의 교차부 일측으로 교차부의 상부와 하부에 각각 회전 가능하게 결합되며, 제1쇼크업소버(50)의 양단 중 일단은 타단보다 링크암(30,40) 사이의 교차부에 더 인접하도록 배치될 수 있다.

[0042] 도 4에서 미설명 부호 21은 링크암(30,40) 사이의 교차부를 회전 가능하게 연결하는 회전축이고, 51 및 52는 제1쇼크업소버(50)의 양단을 각 링크암(30,40)에 회전 가능하게 결합시키는 회전결합편을 가리킨다.

[0043] 또한 높이조절유닛(10)은 크로스암(20)을 구성하는 한 쌍의 링크암(30,40) 사이의 회전을 허용 또는 차단하도록 마련된 높이조절용 잠금장치(60)를 포함할 수 있다.

[0044] 높이조절용 잠금장치(60)는 크로스암(20)을 구성하는 제1 및 제2링크암(30,40) 중 제1링크암(30)에 마련된 제1걸림부(70)와, 제1걸림부(70)에 걸릴 수 있도록 상부지지대(2)에 마련된 제2걸림부(80)와, 제1 및 제2걸림부(70,80) 사이가 걸림 또는 걸림 해제 상태로 전환시키도록 마련된 높이조절용 잠금레버(90)를 포함하도록 구성될 수 있다.

[0045] 높이조절용 잠금레버(90)는 상판(1)의 측방 저부에 상판(1)의 측방 쪽 변과 거의 평행하게 배치되는 높이조절용 손잡이부(91)와, 높이조절용 손잡이부(91)로부터 상판(1) 안쪽으로 연장된 작동부(92)를 구비할 수 있다. 작동부(92)는 제1회전축(93)을 통해 상부지지대(2)에 상하방향으로 회전 가능하게 결합될 수 있다.

[0046] 제1걸림부(70)는 부채꼴 형태로 형성되어 제1링크암(30) 상단에 고정될 수 있으며, 볼록한 곡면을 이루는 제1걸림부(70)의 일측 둘레는 복수의 제1톱니(72)를 구비하는 제1톱니부(71)를 이룰 수 있다. 제1걸림부(70)는 제1링크암(30)과 함께 회전하게 되는데, 제1톱니부(71)가 상판(1)이 상승된 상태에서 저부를 향하고, 상판(1)이 하강함에 따라 차츰 후방 측을 향하도록 배치될 수 있다.

[0047] 제2걸림부(80)는 제1회전축(93)과 제1걸림부(70) 사이의 상부지지대(2)에 제2회전축(81)을 통해 회전 가능하게 결합될 수 있다. 또 제2걸림부(80)는 제2회전축(81) 쪽에서 제1걸림부(70) 저부로 연장된 연장부(82)를 구비하며, 연장부(82)에 있어서 오목한 곡면을 이루는 상측은 제1톱니(72)와 이물림 될 수 있도록 복수의 제2톱니(85)가 마련된 제2톱니부(84)를 형성할 수 있다.

[0048] 제2회전축(81) 타측으로 제1회전축(93) 쪽 제2걸림부(80)에는 높이조절용 잠금레버(90)의 작동부(92)에 걸릴 수 있게 작동부(92)와 교차하도록 걸림바(83)가 연장될 수 있다.

[0049] 또 제2걸림부(80)는 제1탄성부재(61)를 통해 제2톱니부(84) 쪽이 제1톱니부(71) 쪽으로 탄성지지 되도록 설치될 수 있다. 제1탄성부재(61)는 일단이 상부지지대(2)에 지지되고 타단이 제2걸림부(80)에 지지되도록 마련된 코일스프링으로 구성될 수 있다.

[0050] 따라서 이와 같은 구조에서는 이용자가 높이조절용 잠금레버(90)의 높이조절용 손잡이부(91)를 손으로 잡아 상판(1) 배면 쪽으로 들어올리게 되면, 제1탄성부재(61)가 압축되면서 제2회전축(81)을 중심으로 제2걸림부(80)의 걸림바(83)는 상부 쪽으로 들려지게 되는 반면, 연장부(82) 쪽이 저부로 내려가게 되면서 제1톱니부(71)에 대한 제2톱니부(84)의 치합 상태가 해제된다. 따라서 이때는 크로스암(20)을 구성하는 링크암(30,40) 사이의 회전이 허용됨에 따라 상판(1)은 크로스암(20)의 접철 동작을 통해 승강되면서 높이 조절이 가능한 상태가 된다.

[0051] 이 상태에서 상판(1)을 이용자가 원하는 높이로 승강시킨 상태에서 이용자가 높이조절용 손잡이부(91)에 가해졌던 힘을 제거하게 되면, 제1탄성부재(61)의 복원력에 의해 제2회전축(81)을 중심으로 제2걸림부(80) 일측의 걸림바(83)는 아래로 내려지게 되는 반면, 연장부(82)가 상부로 들어올려 지면서 제2톱니부(84)는 다시 제1톱니부(71)에 이물림 되고, 이에 따라 상판(1)은 다시 승강동작이 잠김 상태를 유지하게 된다.

[0052] 또한 적어도 일부의 제1톱니(72)들은 일측의 제1치면(72a)이 접선에 대하여 경사지고, 타측의 제2치면(72b)이 접선에 대하여 수직 방향으로 형성되도록 마련되고, 적어도 일부의 제2톱니(85)들은 치합 상태에서 제1톱니(72)의 제2치면(72b)에 대응하는 일측의 제1치면(85a)이 접선에 대하여 수직 방향으로 형성되고, 제1톱니(72)의 제1치면(72a)에 대응하는 타측의 제2치면(85b)이 접선에 대하여 경사지도록 마련될 수 있다.

[0053] 이와 같이 구성된 제1 및 제2톱니(72,85)는 접선에 대하여 수직한 제1톱니(72)의 제1치면(72a)과 제2톱니(85)의 제2치면(85b) 사이를 통해 상호 간의 걸림력이 향상되어 잠금 상태에서 둘 사이의 이물림이 해제될 우려가 줄어들고, 접선에 경사진 제1톱니(72)의 제2치면(72b)과 제2톱니(85)의 제1치면(85a) 사이를 통해 잠금 해제 동작시 둘 사이의 이물림 상태가 신속하게 해제될 수 있게 된다.

[0054] 따라서 본 실시 예에 따른 스탠딩 데이블은 상판(1) 위에 올려지는 물건의 무게가 과도한 경우에도 상승된 상태의 상판(1)이 물건을 지지한 상태를 안전하게 유지할 수 있게 되고, 높이조절유닛(10)의 잠금상태도 신속하게 해제시킬 수 있게 된다.

[0055] 또한 크로스암(20)을 구성하는 한 쌍의 링크암(30,40) 사이에는 상판(1)이 상승하는 방향으로 링크암(30,40) 사이를 탄성지지 하기 위한 제2탄성부재(22)(도 4 참조)가 마련될 수 있다.

[0056] 제2탄성부재(22)로는 중앙이 힌지축(21)에 끼워진 상태에서 양단이 힌지축(21) 상부의 제1링크암(30)과 제2링크암(40)에 각각 연결된 토션스프링이 채용될 수 있다.

[0057] 제2탄성부재(22)를 통해 제1 및 제2링크암(30,40) 사이가 상판(1)의 상승방향으로 탄지된 상태에서는 높이조절

용 잠금장치(60)에 의해 링크암(30,40) 사이의 회전이 허용된 상태에서 별다른 외력을 가하지 않더라도 상판(1)의 상승동작이 유발되어 상판(1) 위에 무거운 물건이 올려져 있는 상태에서도 상판(1)을 원활하게 상승시킬 수 있게 된다. 따라서 제2탄성부재(22)는 링크암(30,40) 사이의 회전이 허용된 상태에서 제1쇼크업소버(5)에 의해 상승하게 되는 상판(1)의 상승동작을 스타팅 시키는 역할을 수행하게 된다.

[0058] 크로스암(20)은 상판(1)의 승강동작을 안정적으로 지지하도록 상부 및 하부지지대(2,3) 사이의 양측에 한 쌍으로 배치될 수 있다.

[0059] 그리고 크로스암(20)의 회전동작을 구속하는 높이조절용 잠금장치(60)는 각 크로스암(20)의 동작을 개별적으로 조작하도록 한 쌍으로 마련되며, 각 높이조절용 잠금레버(90)의 높이조절용 손잡이부(91)는 양손으로 동시에 조작할 수 있도록 상판(1) 저부 양측으로 배치될 수 있다.

[0060] 이와 같은 높이조절유닛(10)은 한 쌍의 크로스암(20)이 각각 대응하는 높이조절용 잠금장치(60)에 의해 개별적으로 동작되는 구조를 갖기 때문에, 한 쪽 크로스암(20)의 회전만 허용된 상태에서 상판(1)의 높이 가변을 제한하고, 한 쌍의 높이조절용 손잡이부(91)를 양손으로 동시에 조작하여 한 쌍의 크로스암(20)의 회전이 함께 허용된 상태에서만 상판(1)의 높이가 가변 될 수 있도록 한다. 따라서 본 실시 예에 따르면, 상판(1)의 승강 동작시 이용자의 손이 상부지지대(2)과 하부지지대(3) 사이에 끼게 되는 것을 거의 완벽하게 방지할 수 있게 되므로, 상판(1)의 승강에 따른 안전성을 충분히 확보할 수 있게 된다.

[0061] 또한 스탠딩 테이블은 상판(1)의 경사를 가변시키도록 마련된 경사조절유닛(100)을 더 구비하도록 마련될 수 있다.

[0062] 이를 위해 먼저 상판(1)은 전방 하면이 경첩부재(110)를 통해 상부지지대(2) 전방에 회전 가능하게 결합될 수 있다. 따라서 상판(1)은 전방이 상부지지대(2)에 힌지 결합된 상태에서 상부지지대(2) 상부에 회전 가능한 상태로 지지될 수 있게 된다.

[0063] 그리고 도 8내지 도 11에 도시된 바와 같이, 경사조절유닛(100)은 상판(1)의 경사를 높이는 방향으로 탄성지지하도록 상판(1) 저부에 위치하는 걸쇠(120)와, 걸쇠가 단계적으로 걸릴 수 있도록 마련된 복수의 제1걸이홈(130a,130b,130c)을 구비하도록 상판(1) 배면에 고정된 걸림판(130)과, 복수의 제1걸이홈(130a,130b,130c)과 같은 간격으로 나란히 배치된 복수의 제2걸이홈(140a)을 구비하여 제2걸이홈(140a)들이 제1걸이홈(130a,130b,130c)들과 일치된 상태로 정렬이 가능하도록 걸림판(130)에 슬라이딩 가능하게 장착된 슬라이딩부재(140)와, 슬라이딩부재(140)를 걸쇠(120)의 탄성지지방향의 반대방향으로 가압하여 슬라이딩 시키도록 마련된 가압수단(150)을 포함하도록 구성될 수 있다. 여기서 제1 및 제2걸이홈이 일치된 상태로 정렬된다는 것은 제1 및 제2걸이홈에 걸쇠(120)가 함께 걸릴 수 있도록 된다는 것을 의미한다.

[0064] 걸쇠(120)는 실질적으로 걸이홈에 걸리도록 수평으로 마련된 걸이봉(121)과, 걸이봉(121) 양단에 수직으로 연장된 한 쌍의 지지봉(122)을 구비하는 'ㄷ'자 모양으로 마련될 수 있다. 걸쇠(120)의 설치를 위해 상부지지대(2) 내측으로는 고정브래킷(129)이 설치될 수 있으며, 걸쇠(120)는 양 지지봉(122) 끝단에 측방으로 연장된 끼움돌기(122a)가 고정브래킷(129)에 회전 가능하게 결합된 상태로 고정브래킷(129)에 고정될 수 있다. 걸쇠(120)가 상판(1)의 경사를 높이는 방향으로 탄성지지 되도록 적어도 한 쪽의 끼움돌기(122a)에는 제3탄성부재(미도시)가 설치될 수 있으며, 제3탄성부재(미도시)는 중앙이 끼움돌기(122a)에 끼워진 상태에서 일단은 고정브래킷(129)에 고정되고 타단이 걸쇠(120)의 지지봉(122)에 고정된 토션스프링으로 마련될 수 있다.

[0065] 걸림판(130)은 나사 등의 체결부재를 통해 상판(1)의 배면에 체결되는 상판부(131)와, 상판부(131) 양측에 평행하게 수직으로 연장된 한 쌍의 측판부(132)를 포함할 수 있다. 측판부(132)는 상판(1)의 전후방으로 다소 길게 연장될 수 있으며, 상기 제1걸이홈(130a,130b,130c)은 각 측판부(132)에 측판부(132)의 길이방향을 따라 일정간격 이격되도록 형성될 수 있다. 본 실시 예의 경우 제1걸이홈(130a,130b,130c)은 각 측판부(132)에 3개씩 형성된다. 제1걸이홈(130a,130b,130c)은 슬라이딩부재(140)의 슬라이딩방향을 따라 양쪽의 제1(130a) 및 제3군(130c)과, 제1 및 제3군(130a,130c) 사이에 위치하는 제2군(130b)으로 구분될 수 있다.

[0066] 그리고 슬라이딩부재(140)는 한 쌍의 측판부(132) 사이에 측판부(132)와 나란하게 배치되는 한 쌍의 슬라이딩판(141)을 구비하도록 마련될 수 있다. 한 쌍의 슬라이딩판(141)은 상호 연결된 상태에서 걸림판(130)의 상판부(131)에 걸림판(130)의 길이방향으로 슬라이딩 가능하게 체결될 수 있다.

[0067] 각 슬라이딩판(141)에는 복수의 제2걸이홈(140a)이 제1걸이홈(130a,130b,130c) 사이의 간격과 같은 간격으로 형성될 수 있다. 제2걸이홈(140a)은 슬라이딩판(141)마다 2개씩 마련될 수 있다. 본 실시 예의 경우 걸쇠(120)의 걸이봉(121)이 안정적으로 걸릴 수 있도록 제1걸이홈(130a,130b,130c)이 마련된 걸림판(130)의 측판부(132)와,

제2걸이홈(140a)이 형성된 슬라이딩부재(140)의 슬라이딩판(1410)을 한 쌍씩 마련하였으나, 측판부(132)와 슬라이딩판(141)은 각각 하나씩으로도 구성이 가능하다.

[0068] 그리고 가압수단(150)은 경사조절용 잠금레버(160)와, 경사조절용 잠금레버(160)를 조작함에 따라 슬라이딩부재(140)를 걸쇠(120)의 탄성지지방향과 반대방향으로 밀도록 마련된 링크부재(170)를 포함하도록 구성될 수 있다.

[0069] 경사조절용 잠금레버(160)는 걸림판(130)의 길이방향과 수직으로 교차되는 방향으로 측판부(132)에 회전 가능하게 결합된 작동부(161)와, 작동부(161) 일단으로부터 절곡연장된 연결부(162)와, 연결부(162) 일단에 다시 절곡연장되어 작동부(161)와 평행하게 마련된 경사조절용 손잡이부(163)를 포함할 수 있다. 이러한 경사조절용 잠금레버(160)는 제4탄성부재(미도시)를 통해 경사조절용 손잡이부(163)가 상판(1) 저부로 탄력지지 되도록 걸림판(130)에 설치될 수 있다. 제4탄성부재(미도시)는 일단은 작동부(161)에 지지되고 타단은 걸림판(130)에 지지되는 토션스프링으로 마련될 수 있다.

[0070] 그리고 링크부재(170)는 일단이 작동부(161)에 고정되어 작동부(161)의 회전시 회동하도록 마련된 제1링크(171)와, 중도가 절곡된 상태로 한 쌍의 슬라이딩판(141) 사이에 고정되어 제1링크(171)와 대응하는 단부가 제1링크(171)에 회전 가능하게 결합된 제2링크(172)를 포함하도록 구성될 수 있다. 제2링크(172)는 양측으로 연장된 고정돌기(172a)가 슬라이딩판(141)에 체결됨에 따라 슬라이딩판(141)에 고정된 상태로 제1링크(171)에 밀려 슬라이딩판(141)을 전진방향으로 슬라이딩시킬 수 있게 된다.

[0071] 경사조절유닛(100)을 이용한 상판(1)의 경사조절동작을 설명하면 다음과 같다.

[0072] 도 9에는 걸쇠(120)의 걸이봉(121)이 상호 일치된 제1걸이홈(130a,130b,130c)의 제2군(130b)과 제2걸이홈(140a)에 걸린 상태의 구조가 도시된다.

[0073] 이 상태에서 상판(1)의 경사를 더욱 높이고자 할 경우, 이용자는 도 10에 도시된 바와 같이, 경사조절용 잠금레버(160)의 경사조절용 손잡이부(163)를 상판(1) 배면 쪽으로 들어올리게 된다.

[0074] 이에 따라 제1링크(171)의 회전동작에 의해 제1 및 제2링크(171,172) 사이가 벌어지게 되면서 슬라이딩부재(140)는 제2링크(172)와 함께 화살표 방향으로 전진하게 된다. 따라서 이 상태에서는 나란하게 되어 있던 제1 및 제2걸이홈(130b,140a) 사이가 어긋난 위치가 되면서 제1 및 제2걸이홈에 걸려 있던 걸이봉(121)이 제1 및 제2걸이홈(130b,140a)으로부터 빠져 나오게 된다.

[0075] 이 상태에서 이용자는 상판(1)의 후방을 상부로 들어올리거나 하부로 내려 상판(1)의 경사를 변화시키게 되는데, 이때 상판(1)이 경사가 높아지도록 전방으로 세워질 경우 걸쇠(120)는 제3탄성부재(미도시)를 통해 세워지는 방향으로 이동하게 되고, 상판(1)이 경사가 낮아지도록 눕혀질 경우 걸쇠(120) 역시 걸림판(130)에 의해 눌려져 눕혀지게 된다.

[0076] 이후 경사조절용 잠금레버(160)의 경사조절용 손잡이부(163)에 가해졌던 힘을 제거하게 되면, 도 11에 도시된 바와 같이, 제4탄성부재(미도시)의 복원력을 통해 슬라이딩부재(140)가 후진하게 되면서 제2걸이홈(140a)은 보조판(3)의 경사변화에 따라 제1걸이홈(130a,130b,130c) 중 1군(130a) 또는 3군(130c)과 일치된 상태로 정렬될 수 있게 되고, 걸이봉(121)은 다시 일치된 제1 및 제2걸이홈에 걸려 지지되면서 조절된 상판(1)의 경사가 유지되도록 한다.

[0077] 도 11의 경우, 걸이봉(121)이 제1걸이홈(130a,130b,130c) 중 제1군(130a)과 일치된 제2걸이홈(140a)에 걸려 지지됨으로써, 도 9에 대해 상판(1)이 더 큰 경사를 갖도록 조절된 상태를 나타낸 것이다.

[0078] 그리고 상기 경사조절용 손잡이부(163)는 상판(1)의 외곽 안쪽에 위치하게 되며, 경사조절용 손잡이부(163)의 위치에 대응하는 부위의 상판(1)에는 경사조절용 손잡이부(163)를 상판(3) 상부로부터 손을 넣어 잡을 수 있도록 조작구멍(1a)이 관통되게 마련될 수 있다.

[0079] 따라서 경사조절유닛(100)을 이용하여 상판(1)의 경사를 가변시키고자 할 경우, 이용자는 자신의 한 쪽 손을 상판(1) 상부로부터 조작구멍(1a)으로 삽입한 상태에서 경사조절용 손잡이부(163)를 파지하여 조작할 수 있게 된다. 이때 이용자는 경사조절용 손잡이부(163)를 파지한 손으로 상판(3)을 걸어 잡을 수 있게 되므로, 상판(1)을 손으로 잡은 상태에서 상판(1)의 경사를 안전하게 조절할 수 있게 된다.

[0080] 또 상판의 경사조절 동작이 진동이 없는 상태에서 안정적으로 이루어질 수 있도록 상판(1)과 고정브래킷(129) 사이에는 제2 쇼크업소버(shock absorber) (180)가 더 설치될 수 있다.

[0081] 제2 쇼크업소버(180)는 일단이 상판(1) 저면에 결합되고 타단이 고정브래킷(129) 일측에 결합되어 상판(1)의 경

사소절 동작에 따른 충격을 흡수하게 된다.

[0082] 이상에서는 특정의 실시 예에 대하여 도시하고 설명하였다. 그러나 본 고안은 상기한 실시 예에만 한정되지 않으며, 고안이 속하는 기술분야에서 통상의 지식을 가진 자라면 이하의 청구범위에 기재된 고안의 기술적 사상의 요지를 벗어남이 없이 얼마든지 다양하게 변경 실시할 수 있을 것이다.

부호의 설명

[0083]

1: 상판 1a: 조작구멍

2: 상부지지대 3: 하부지지대

10: 높이조절유닛 20: 크로스암

30: 제1링크암 40: 제2링크암

50: 제1쇼크업소버 60: 높이조절용 잠금장치

70: 제1결림부 72: 제1톱니

80: 제2결림부 85: 제2톱니

90: 높이조절용 잠금레버 91: 높이조절용 손잡이부

100: 경사조절유닛 120: 결쇠

130: 결림판 140: 슬라이딩부재

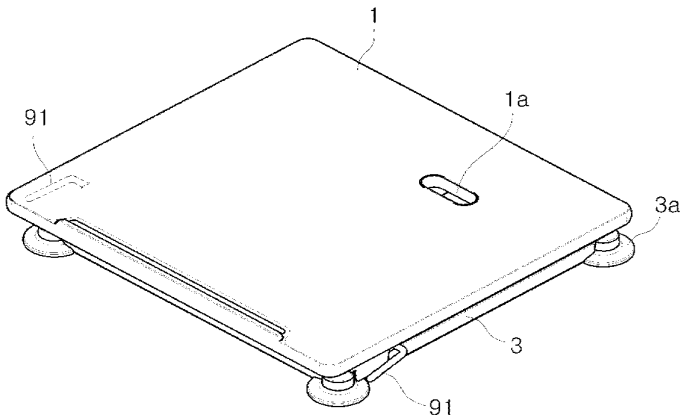
150: 가압수단 160: 경사조절용 잠금레버

163: 경사조절용 손잡이부 170: 링크부재

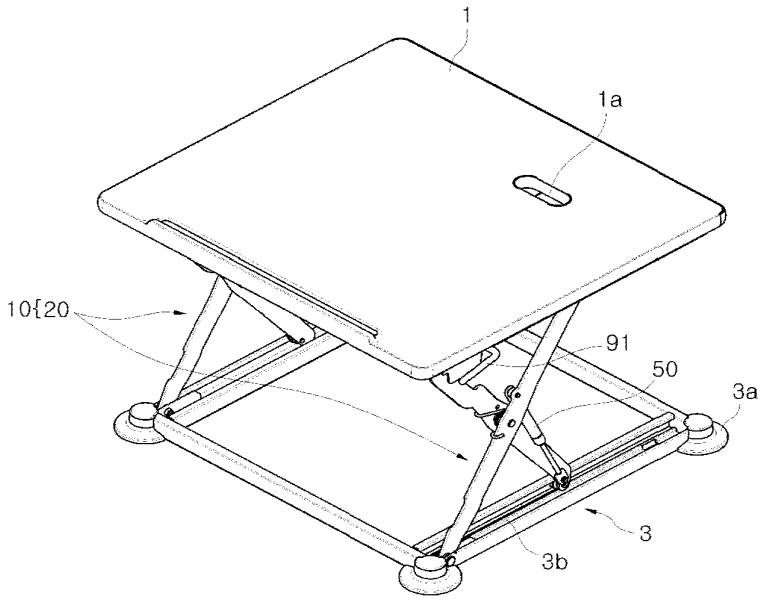
180: 제2쇼크업소버

도면

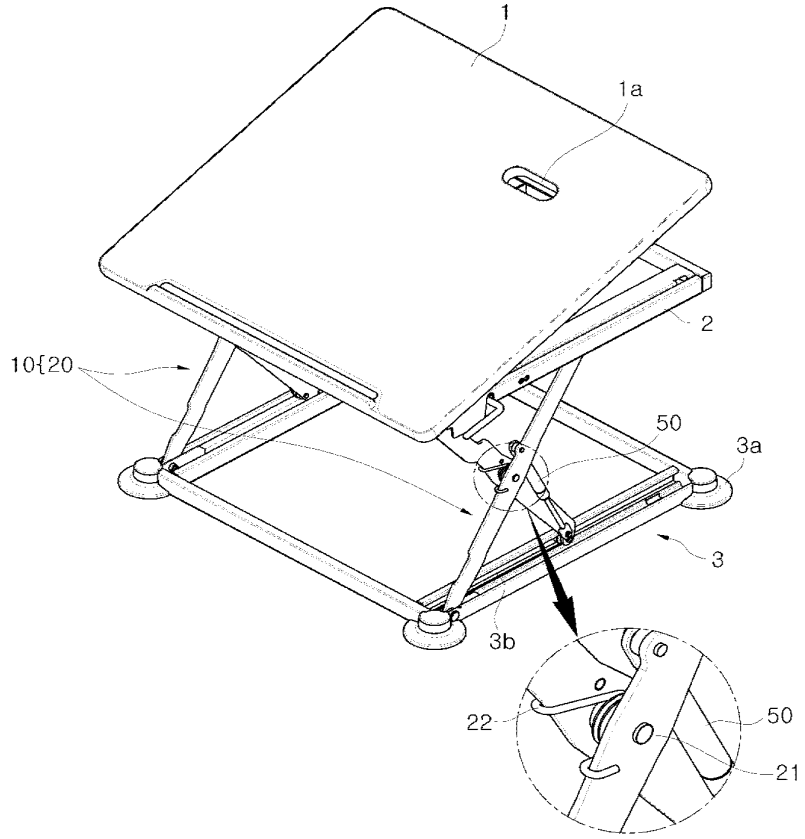
도면1



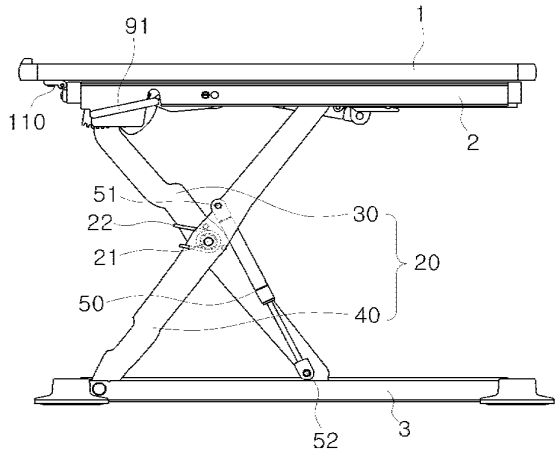
도면2



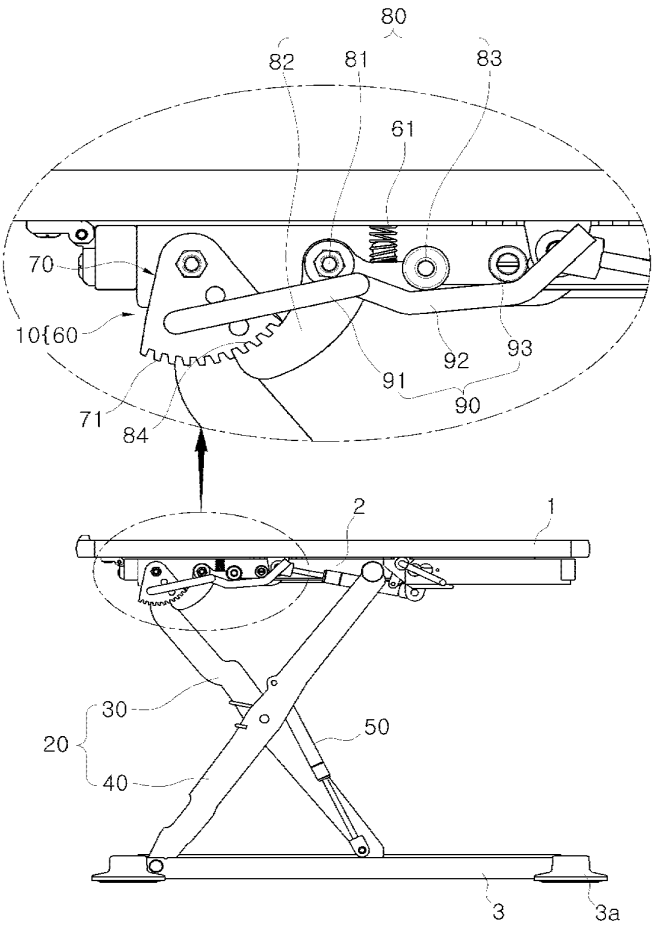
도면3



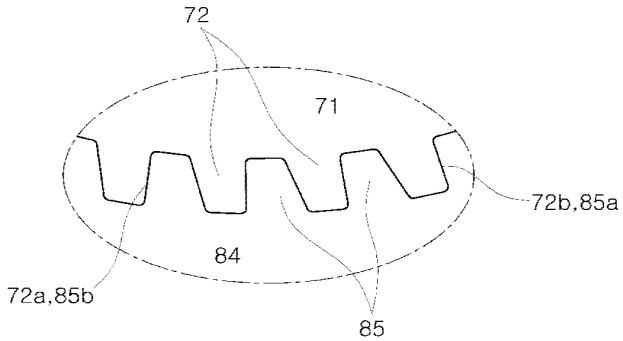
도면4



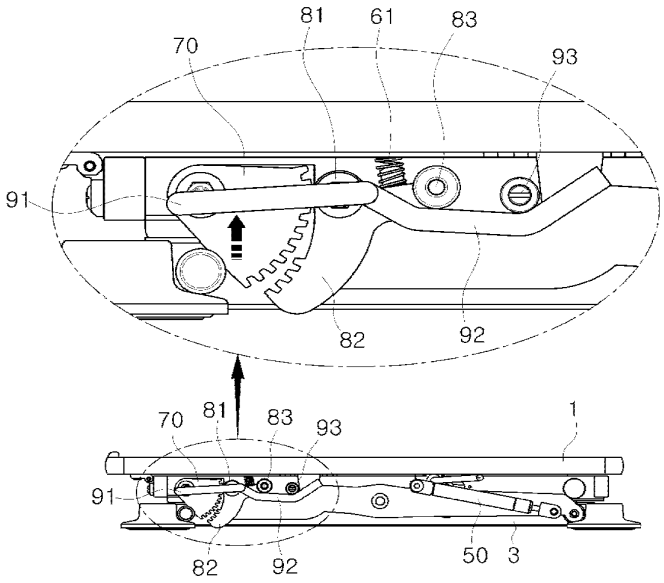
도면5


80
82
81
83
61
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84
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3a

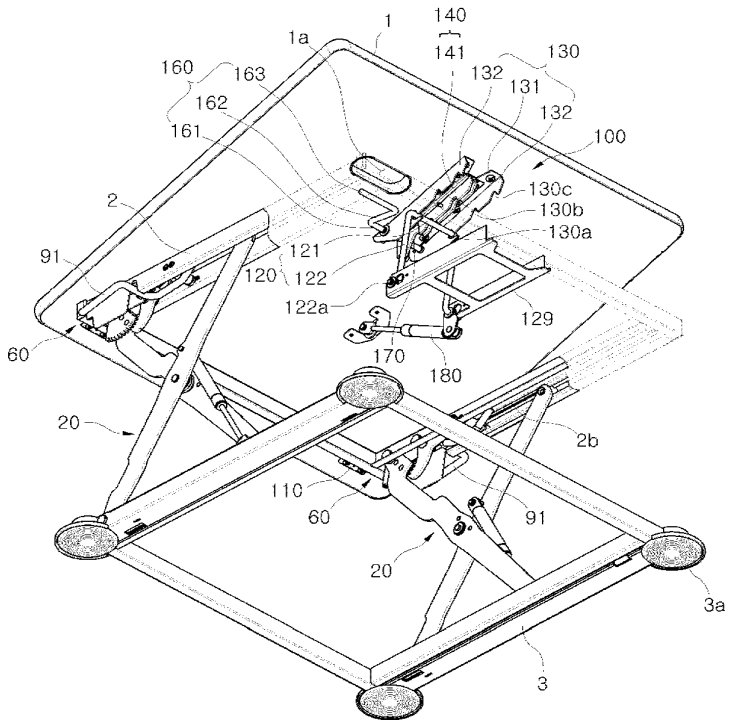
도면6


72
71
72b,85a
84
72a,85b
85

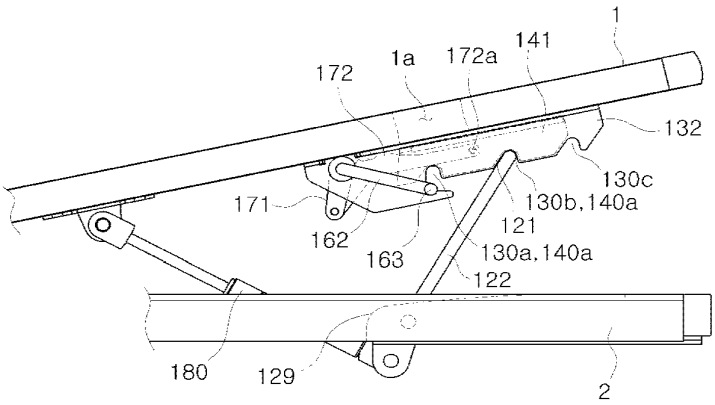
도면7


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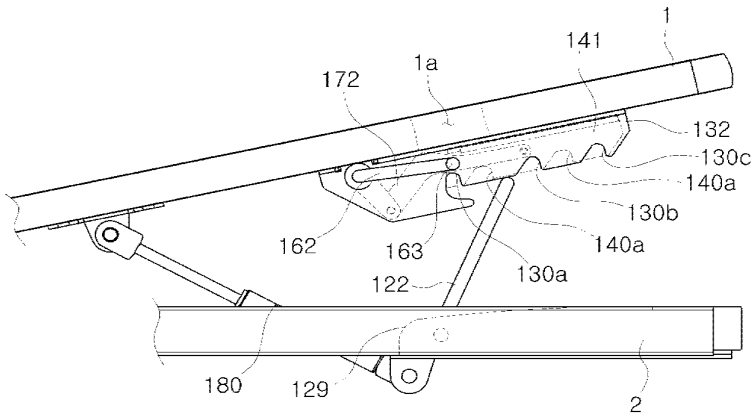
도면8


1
140
1a
141
160
163
130
132
131
162
132
161
100
130c
2
130b
130a
121
91
120
122
122a
129
60
170
180
20
2b
110
60
91
20
3a
3

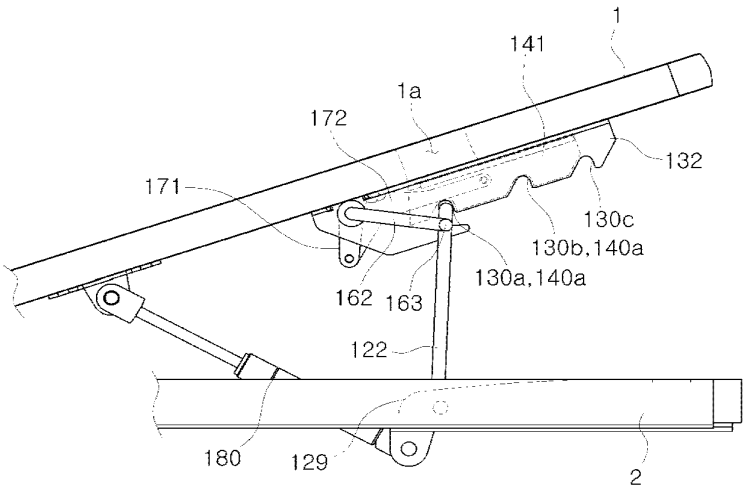
도면9



도면10



도면11



Patents

Table with adjusting the height

Abstract

translated from Korean

The present invention provides a pair of adjustable legs beneath a horizontal table, with one of the legs fluidly mountable on the hinge of a support frame contacting the table and the ground, and the other of the legs being capable of rolling contact with the table and the support frame So that the height of the table can be adjusted with respect to the support frame. As a result, the other legs can be fixed to the rack formed on the support frame, The stopper formed on the leg can be fixed at an arbitrary position of the rack of the support according to the height of the table with respect to the support frame so that the height of the stopper can be appropriately set in accordance with the working environment of the user Adjustable The present invention relates to adjustable height adjustable tables, wherein the adjustable legs A table 10 is formed on the upper side and a square receiving table 20 is formed on the lower side so that the table 10 and the support frame 20 are fixed to each other. A pair of variable legs 30 are provided between the table 10 and the support frame 20 so as to adjust the height of the table 10 with respect to the support frame 20. The present invention also provides a pair of One of the variable legs 30 is formed in the table 10 and the support frame 20 so as to be able to move about the upper rear hinge 12 and the lower rear hinge 13 and the other side is provided with the upper rollers 31, Down rollers 32 are formed so as to be capable of rolling on each of the upper rail beam 11 and the lower rail beam 21 so as to adjust the height of the table 10 with respect to the support frame 20 , The present invention also includes a rack 22 having a certain length formed in the support frame 20, A stopper 33 is formed on the other side of the leg 30 so that the stopper 33 of the variable leg 30 can be held and fixed at an arbitrary position of the rack 22 of the support frame 20, The height of the table 10 can be adjusted with respect to the support frame 20 according to the selection and the operation lever stick 60 is fixed to the stopper 33 of the variable leg 30 The stopper 33 is released from engagement with the rack 22 of the support frame 20 by the adjustment of the operation lever stick 60 in the standing posture of the user, So that this engagement can be maintained in the position.

KR20140004886U

South Korea

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Other languages: Korean

Inventor: 신현필

Worldwide applications

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Application KR20201300001467U events

2013-02-26 Application filed by 신현필

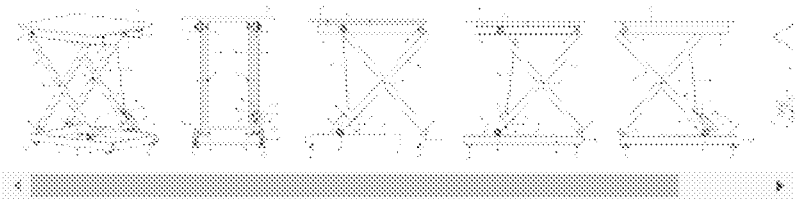
2013-02-26 Priority to KR20201300001467U

2014-09-03 Publication of KR20140004886U

Info: Cited by (5), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Images (6)



Classifications

- A47B9/16 Tables with tops of variable height with means for, or adapted for, inclining the legs of the table for varying the height of the top, e.g. with adjustable cross legs

View 1 more classifications

Claims (4)

Hide Dependent

translated from Korean

In a height adjustable table in which variable legs are formed on a table so that the height of the table can be adjusted from the ground,
A table 10 is formed on the upper side and a square support frame 20 is formed on the lower side and a pair of variable legs 30 are formed between the table 10 and the support frame 20, So that the height of the table (10) can be adjusted. 2. The apparatus according to claim 1, wherein one of a pair of variable legs (30) between the table (10) and the support frame (20) is provided with an upper rear hinge (12) and a lower rear hinge (13) And the other one of the upper and lower rollers 31 and 32 is formed to be capable of rolling on each of the upper rail beam 11 and the lower rail beam 21 So that the elevation of the table (10) can be adjusted with respect to the support frame (20). The stopper (20) is provided with a rack (22) having a predetermined length and a stopper (33) is formed on the other side of the variable leg (30) 33 can be held and fixed at an arbitrary position of the rack 22 of the support frame 20 so that the height of the table 10 with respect to the support frame 20 can be adjusted according to the user's choice Height adjustable table. The operation lever stick 60 having the long length is fixed to the stopper 33 of the variable leg 30 so that the stopper 33 can be moved in the standing posture by the adjustment of the operation lever stick 60 Whereby the engagement of the stopper (20) with the rack (22) is released and the stopper (33) is held in engagement with the rack (22) at an arbitrary position.

Description

translated from Korean

(Table with adjusting the height)

The present invention relates to a height adjustable table capable of adjusting the height of a horizontal table from the ground, more particularly, a pair of adjustable legs below a horizontal table, wherein one side of the leg contacts the table with the ground So that the legs can move to one side about one table and the other table, so that the table can be moved relative to the table with respect to the table, And the other legs can be fixed at an arbitrary position by means of a stopper on a rack formed on the support frame. Thus, the height of the stopper can be adjusted in accordance with the height of the table relative to the support frame, Can be fixed at an arbitrary position of the rack of the support table. It will stand properly on the height-adjustable table that can be selected to adjust the height.

Generally, a table used in a work table or the like is generally a fixed table in which a table horizontally disposed and a leg supporting a table are firmly fastened to each other so that objects can be placed thereon.

In the case of such a stationary table, each of the components is firmly fastened to each other and has an advantage of excellent supportability and durability. However, in the work environment of the operator, for example, There is a problem that the working efficiency is lowered due to the difference in height when the table is used for sharing or when the workpiece extracted from another machine has a height in handling the workpiece and is subjected to secondary machining or the like , And purchasing a table having a different height according to each working environment may also increase the maintenance cost of the facility.

Further, in the case of a table adjusting the height, the leg of the table is made to be a folding leg, and the folding leg can adjust the degree of folding of the folding leg from the ground by means of a cylinder or the like, However, since the cylinder must be mounted on the folding leg of the table and the driving member for driving the cylinder is additionally installed, the cost of the product is increased.

In order to overcome the above problem, the present invention has a problem that a table is formed on the upper side and a square support frame is formed on the lower side, and a pair of variable legs are formed between the table and the support frame to adjust the height of the table relative to the support frame. .

In addition, the present invention is characterized in that one of the pair of adjustable legs is formed between the table and the support frame so as to be movable around the hinge on the table and the support frame and the other is formed to be capable of rolling the table, And the like.

Further, in the present invention, a rack having a certain length is formed on the support frame, and a stopper is formed on the other side of the variable leg so that the stopper of the variable leg can be held and fixed at an arbitrary position of the rack of the support frame, The height of the table relative to the support frame can be increased.

In addition, according to the present invention, the operation lever stick is fixed to the stopper of the variable leg so that the stopper can be disengaged from the rack of the support frame by adjusting the operation lever stick in the standing posture of the user, So that the engagement can be maintained in the position.

The present invention relates to a height adjustable table in which variable legs are formed on a table so that the height of the table can be adjusted from the ground, a table is formed on the upper side and a square support frame is formed on the lower side, A variable leg is formed so that the height of the table can be adjusted with respect to the support frame.

The present invention also contemplates that between the table and the support frame one of the pair of flexible legs is formed in the table and the support frame to be movable about the upper rear hinge and the lower rear hinge and the other is formed with upper and lower rollers So that the upper rail beam and the lower rail beam can be moved in a rolling manner, so that the height of the table can be adjusted with respect to the support frame.

Further, in the present invention, a rack having a certain length is formed on the support frame, and a stopper is formed on the other side of the variable leg so that the stopper of the variable leg can be held and fixed at an arbitrary position of the rack of the support frame, The height of the table can be adjusted with respect to the support frame.

In addition, in the present invention, an operation lever stick having a long length is fixed to the stopper of the variable leg, and when the stop lever is engaged with the rack of the support frame by the adjustment of the operation lever stick, So that this engagement can be maintained.

As described above, the present invention provides a pair of adjustable legs below a horizontal table, one of the legs being fluidly mounted on a hinge of a support frame that contacts the table with the ground, and the other of the legs being in rolling contact with the table and the support frame So that the legs can be moved to the other side with respect to one of the support frame and the table so that the height of the table can be adjusted with respect to the support frame and the other legs can be made adjustable The stopper formed on the leg can be fixed at an arbitrary position of the rack of the support frame in accordance with the height of the table with respect to the support frame so that the stopper can be fixed to the support frame at an arbitrary position, It is possible to select the height to adjust properly.

FIG. 1 is a perspective view of a table capable of adjusting the height of the present invention,
Figure 2 is a side elevation view of a height adjustable table of the present invention,
FIG. 3 is a front view of a height adjustable table of the present invention,
Fig. 4 is a view showing the state in which the operation control stick is operated in the elevation adjustable table of the present invention,
Fig. 5 is a rear view of the elevation adjustable table of the present invention in which the operation control stick is operated, Fig.
6 is a perspective view of another example of a height adjustable table of the present invention.

Specific examples of the present invention will be described in detail with reference to the accompanying drawings.

As shown in Figs. 1 to 5, the height adjustable table of the present invention has a flat table 10 on which an object or the like can be placed on the upper side, and a square receiving tray 20 which is in contact with the ground on the lower side And a pair of adjustable legs 30 are formed between the table 10 and the support frame 20 to adjust the height of the table from the ground.

Below the table 10, upper rail beams 11 having a long section in the longitudinal direction are formed in parallel with each other at intervals. Upper rollers 31 of the variable legs 30 to be described later are mounted on the upper rail beams 11 so as to be capable of rolling and the variable legs 30, And is movably mounted by rear hinges (12).

Next, the rectangular support frame 20 is a large rectangular frame member, and the lower rail beams 21 are formed in parallel with the longitudinal direction of the support frame 20. { The lower rail beams 21 are formed in parallel with the upper rail beams 11 of the table 10.

A rack 22 having teeth of a predetermined length is fixed to one side of the lower rail beam 21 of the support frame 20 by fixing means such as welding.

This rack 22 allows the stopper 33 formed on one side of the later-described variable leg 30 to be engaged and disengaged.

On the four sides of the support frame 20, there are provided support pads 23 in contact with the ground.

Next, variable legs 30 are formed between the table 10 and the support frame 20, and the variable legs 30 are folded into a substantially X-shaped link which can be moved by the central hinge 34 in the center So that a pair of X-shaped links are mounted between the table 10 and the support frame 20 in parallel.

That is, one of the pair of variable legs 30 between the table 10 and the support frame 20 is fixed to the table 10 and the support frame 20 with the upper rear hinge 12 and the lower rear hinge 13 as the center And the other one of the upper and lower rollers 31 and 32 is formed so as to be capable of rolling on the upper rail beam 11 and the lower rail beam 21, 20, the height of the table 10 can be adjusted.

A stopper 33 is formed on the other side of the variable leg 30. The stopper 33 is fixed to the hinge bracket 40 by fixing means such as a bolt 42 or the like. The stopper 33 is fixed to the hinge shaft 41 at the center of the hinge bracket 40 and the stopper 33 can be held elastically by the torsion spring 50 wound around the hinge shaft 41 Respectively. The torsion spring 50 allows the stopper 33 to exert a biasing force toward the rack 22 of the support frame 20 so that the stopper 33 can be held resiliently against the teeth of the rack 22 .

The torsion spring 50 is wound on the hinge shaft 41 of the hinge bracket 40 so that one end of the spring is held by the hinge bracket 40 and the other end is held by the stopper 33, 33 can be held resiliently against the teeth of the rack 22.

The operation lever stick 60 having a long length is fixed to the stopper 33 of the variable leg 30 so that the stopper 33 is moved in the posture of the support frame 20 So that the engagement of the stopper 33 with the rack 22 at an arbitrary position can be maintained.

3, when the operation lever stick 60 is pushed to the right, the stopper 33, which is resiliently held on the hinge bracket 40 of the variable leg 30, Can be separated from the teeth of the rack (22) of the vehicle. In this state, when the table 10 is slightly pushed to the right in Fig. 4 and the stopper 33 places the operating lever stick 60 in its original position in the teeth of the appropriate position of the rack 22, State to a higher position than the state.

Conversely, in this state, when the table 10 is slightly pushed to the left in Fig. 4 and the stopper 33 puts the operating lever stick 60 in its original position in the teeth of the appropriate position of the rack 22, Lt; RTI ID = 0.0 > 3, < / RTI >

As described above, the stopper 33 formed on the leg can be fixed at an arbitrary position of the rack 22 of the support frame 20 along the height of the table 10 with respect to the support frame 20, Depending on the environment, the height can be adjusted appropriately.

6, the lower rail beams 21 of the support frame 20 may be formed such that the rail beams 21 having a long cross section in the longitudinal direction are formed side by side at intervals in the same manner as the upper rail beams. The rail beams 21 can protect the lower rollers 32 of the variable legs 30 from being trampled or the like.

10: Table 11: Upper rail beam
12: Upper rear hinge 13: Lower rear hinge
20: support frame 21: lower rail beam
22: rack 23:
30: variable leg 31: upper roll
32: Lower roll 33: Stopper
34: central hinge 40: hinge bracket
41: Hinge 42: Bolt
50: Torsion spring 60: Operation lever stick

Cited By (5)

Publication number	Priority date	Publication date	Assignee	Title
KR101582864B1 *	2015-08-18	2016-01-07	주식회사 에스엠티	Lift Table for Computing
KR101582865B1 *	2015-08-18	2016-01-19	주식회사 에스엠티	Lift Table for Computing
WO2016137119A1 *	2015-02-27	2016-09-01	에스제이이 주식회사	Height-adjustable table
US9814309B2	2015-08-18	2017-11-14	Seung Ho Kim	Lift table for computer
CN108741900A *	2018-06-29	2018-11-06	池州市德聚软件开发有限公司	A kind of desk bed
Family To Family Citations				

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
KR20140004886U	2014-09-03	Table with adjusting the height
US2843391A	1958-07-15	Creeper with adjustable supporting surface
RU2015149342A	2017-06-07	Device for working with power tools
EP2599595B1	2017-10-11	Adjustable sawhorse
US20070012826A1	2007-01-18	Mobile power tool stand
JPH0717483U	1995-03-28	Workbench
KR101725171B1	2017-04-10	Article storage facility
US9533410B2	2017-01-03	Foldable stand
KR20150133892A	2015-12-01	Portable work panel
RU2011131826A	2013-02-10	CONVEYOR DEVICE USING A CONVEYOR MOBILE MOBILE ELEMENT

KR20120076405A	2012-07-09	Press apparatus to fix drilling work
RU2014142681A	2016-05-20	TOOL MANIPULATION UNIT
CN104797384B	2016-08-24	For assembly or fitting table or the mobile system of welding bench
JP5682491B2	2015-03-11	Conveyor device for assembly work
KR101703729B1	2017-02-07	Fixing apparatus for forming eye portion of stabilizer
CN101405532A	2009-04-08	Support means
US8997659B2	2015-04-07	Furniture element comprising an articulated plate of variable surface
JP6449801B2	2019-01-09	desk
WO2006041860A3	2007-01-04	Device for a wiggle-free table
KR20150113335A	2015-10-08	Measuring apparatus of roll interval
KR102389192B1	2022-05-02	Functionality Worktable
JP7020319B2	2022-02-16	Transport trolley
JP6055744B2	2016-12-27	Sheet processing device
JP2018202467A	2018-12-27	Base frame
CN101664942A	2010-03-10	Quick clamping system of workbench

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
KR20201300014670	2013-02-26	2013-02-26	Table with adjusting the height

Applications Claiming Priority (1)

Application	Filing date	Title
KR20201300014670	2013-02-26	Table with adjusting the height

Legal Events

Date	Code	Title	Description
2013-02-26	A201	Request for examination	
2014-03-25	E902	Notification of reason for refusal	
2014-07-15	E701	Decision to grant or registration of patent right	

Concepts

machine-extracted

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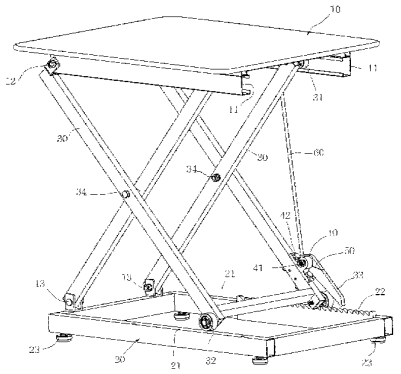
전체 청구항 수 : 총 4 항

(54) 고안의 명칭 **높낮이 조절가능한 상판**

(57) 요 약

본 고안은 수평의 탁자의 아래에 1쌍의 가변 다리를 형성하며 다리의 한쪽들이 탁자와 지면에 접촉되는 받침틀의 힌지에 유동가능하게 장착하고 또한 다른 한쪽들은 상기 탁자와 받침틀에 구름접촉으로 이동가능하게 하여, 다리들이 한쪽의 받침틀과 탁자를 중심으로 다른 한쪽으로 이동가능하게 함으로써, 결국 받침틀에 대하여 탁자의 높이를 조절가능하게 할 수 있고, 또한 상기 다른 한쪽의 다리들이 받침틀에 형성한 래크에 스톱퍼에 의하여 임의의 위치에 고정될 수 있도록 함으로써, 받침틀에 대하여 탁자의 높이에 따라서, 다리에 형성한 스톱퍼가 받침틀의 래크의 임의의 위치에서 고정될 수 있도록 하여, 사용자의 작업환경에 따라서 적절히 높이를 조절 선택할 수 있는 높낮이 조절가능한 탁자에 관한 것으로, 본 고안은 탁자에 가변다리들이 형성되어, 지면으로부터 탁자의 높이를 조절할 수 있는 높낮이 조절가능한 탁자에 있어서, 위쪽에는 탁자(10)가, 아래쪽에 사각의 받침틀(20)이 형성되고, 상기 탁자(10)와 받침틀(20)의 사이에 한쌍의 가변다리(30)가 형성되어, 받침틀(20)에 대하여 탁자(10)의 높낮이를 조절할 수 있도록 되어 있고, 또한 본 고안은 탁자(10)와 받침틀(20)의 사이에 한쌍의 가변다리(30)의 한쪽들이 탁자(10)와 받침틀(20)에 위쪽후방힌지(12)와 아래쪽후방힌지(13)를 중심으로 유동가능하게 형성되고, 또한 다른 한쪽들은 위쪽로울(31)과 아래쪽로울(32)들이 형성되어, 각각의 위쪽레일빔(11)과 아래쪽레일빔(21)에 구름이동가능하게 형성되어, 받침틀(20)에 대하여 탁자(10)의 높낮이를 조절할 수 있도록 되어 있으며, 또한 본 고안은 받침틀(20)에 일정길이의 래크(22)가 형성되고, 또한 가변다리(30)의 다른 한쪽에 스톱퍼(33)가 형성되어, 가변다리(30)의 스톱퍼(33)가 받침틀(20)의 래크(22)의 임의의 위치에서 유지 고정될 수 있도록 하여, 사용자의 선택에 따라서, 받침틀(20)에 대하여 탁자(10)의 높낮이가 조절될 수 있도록 되어 있고, 또한 본 고안은 가변다리(30)의 스톱퍼(33)에 길이가 긴 작동레버스틱(60)이 고정되어, 사용자가 서 있는 자세에서 작동레버스틱(60)의 조절에 의하여 스톱퍼(33)가 받침틀(20)의 래크(22)와의 이맞물림을 해제와 스톱퍼(33)가 래크(22)에 임의의 위치에서 이맞물림이 유지될 수 있도록 되어 있다.

대 표 도 - 도1



실용신안 등록청구의 범위

청구항 1

탁자에 가변다리들이 형성되어, 지면으로부터 탁자의 높이를 조절할 수 있는 높낮이 조절가능한 탁자에 있어서,

위쪽에는 탁자(10)가, 아래쪽에 사각의 받침틀(20)이 형성되고, 상기 탁자(10)와 받침틀(20)의 사이에 한쌍의 가변다리(30)가 형성되어, 받침틀(20)에 대하여 탁자(10)의 높낮이를 조절할 수 있도록 됨을 특징으로 하는 높낮이 조절가능한 탁자.

청구항 2

청구항 1에 있어서, 탁자(10)와 받침틀(20)의 사이에 한쌍의 가변다리(30)의 한쪽들이 탁자(10)와 받침틀(20)에 위쪽후방힌지(12)와 아래쪽후방힌지(13)를 중심으로 유동가능하게 형성되고, 또한 다른 한쪽들은 위쪽로울(31)과 아래쪽로울(32)들이 형성되어, 각각의 위쪽레일빔(11)과 아래쪽레일빔(21)에 구름이동가능하게 형성되어, 받침틀(20)에 대하여 탁자(10)의 높낮이를 조절할 수 있도록 됨을 특징으로 하는 높낮이 조절가능한 탁자.

청구항 3

청구항 1 또는 청구항 2에 있어서, 받침틀(20)에 일정길이의 래크(22)가 형성되고, 또한 가변다리(30)의 다른 한쪽에 스톱퍼(33)가 형성되어, 가변다리(30)의 스톱퍼(33)가 받침틀(20)의 래크(22)의 임의의 위치에서 유지 고정될 수 있도록 하여, 사용자의 선택에 따라서, 받침틀(20)에 대하여 탁자(10)의 높낮이가 조절될 수 있도록 됨을 특징으로 하는 높낮이 조절가능한 탁자.

청구항 4

청구항 3에 있어서, 가변다리(30)의 스톱퍼(33)에 길이가 긴 작동레버스틱(60)이 고정되어, 사용자가 서 있는 자세에서 작동레버스틱(60)의 조절에 의하여 스톱퍼(33)가 받침틀(20)의 래크(22)와의 이맞물림을 해제와 스톱퍼(33)가 래크(22)에 임의의 위치에서 이맞물림이 유지될 수 있도록 됨을 특징으로 하는 높낮이 조절가능한 탁자.

고안의 상세한 설명

기술분야

[0001] 본 고안은 수평의 탁자를 지면으로부터의 높이를 조절할 수 있는 높낮이 조절가능한 탁자에 관한 것으로, 더욱 상세하게는 수평의 탁자의 아래에 1쌍의 가변 다리를 형성하며 다리의 한쪽들이 탁자와 지면에 접촉되는 받침틀의 힌지에 유동가능하게 장착하고 또한 다른 한쪽들은 상기 탁자와 받침틀에 구름접촉으로 이동가능하게 하여, 다리들이 한쪽의 받침틀과 탁자를 중심으로 다른 한쪽으로 이동가능하게 함으로써, 결국 받침틀에 대하여 탁자의 높이를 조절가능하게 할 수 있고, 또한 상기 다른 한쪽의 다리들이 받침틀에 형성한 래크에 스톱퍼에 의하여 임의의 위치에 고정될 수 있도록 함으로써, 받침틀에 대하여 탁자의 높이에 따라서, 다리에 형성한 스톱퍼가 받침틀의 래크의 임의의 위치에서 고정될 수 있도록 하여, 사용자의 작업환경에 따라서 적절히 높이를 조절 선택할 수 있는 높낮이 조절가능한 탁자에 관한 것이다.

배경기술

[0002] 일반적으로, 작업용 탁자 등으로 이용되는 테이블은, 물건을 얹어놓을 수 있도록 수평하게 배치되는 탁자와 탁자를 지지하는 다리가 상호 견고하게 체결되는 고정식 테이블이 일반적이다.

[0003] 이러한 고정식 테이블의 경우에는, 각 구성요소들이 상호 견고하게 체결되어진 구조를 이룸으로, 지지력과 내구성이 우수하다는 장점이 있지만, 작업자의 작업환경 예를 들면, 키가 작은 사람과 키가 큰 사람이 작업용 탁자를 공유로 사용하는 경우라던가, 또는 피가공물을 다룸에 있어서의 높낮이가 다른 기계로부터 추출되는 피가공물을 받아서 2차 가공 등을 행하는 경우에 높낮이의 차이로 인하여 작업효율이 떨어지는 등의 문제가 있고, 또

한 각각의 작업환경에 따라서 높낮이가 다른 탁자를 구매하는 것 또한 설비 유지비를 높게하는 요인이 되기도 한다.

[0004] 또한, 높낮이를 조절하는 탁자의 경우에는 탁자의 다리가 절첩식 다리로 하고 또한 이 절첩식 다리가 실린더 등의 기구들에 의하여 지면으로부터의 절첩다리의 절첩 정도를 조절하도록 하여, 사용상에 있어서는 편리한 점이 있으나, 탁자의 절첩다리에 실린더를 장착하여야 하고 또한 실린더를 구동하는 구동부재 등이 추가적으로 설치되는 관계로 제품의 단가를 높이게 되는 요인이 되게 된다.

고안의 내용

해결하려는 과제

[0005] 본 고안은 상기의 문제를 해소하기 위한 것으로, 위쪽에는 탁자가 또한 아래쪽에 사각의 받침틀이 형성되고, 상기 탁자와 받침틀의 사이에 한쌍의 가변다리가 형성되어, 받침틀에 대하여 탁자의 높낮이를 조절할 수 있도록 됨을 목적으로 한다.

[0006] 또한, 본 고안은 탁자와 받침틀의 사이에 1쌍의 가변다리의 한쪽들이 탁자와 받침틀에 힌지를 중심으로 유동가능하게 형성되고, 또한 다른 한쪽들은 구름이동가능하게 형성되어, 받침틀에 대하여 탁자의 높낮이를 조절할 수 있도록 됨을 목적으로 한다.

[0007] 또한, 본 고안은 받침틀에 일정길이의 래크가 형성되고, 또한 가변다리의 다른 한쪽에 스톱퍼가 형성되어, 가변다리의 스톱퍼가 받침틀의 래크의 임의의 위치에서 유지 고정될 수 있도록 함으로써, 사용자의 선택에 따라서, 받침틀에 대하여 탁자의 높이가 될 수 있도록 됨을 목적으로 한다.

[0008] 또한, 본 고안은 가변다리의 스톱퍼에 작동레버스틱이 고정되어, 사용자가 서 있는 자세에서 작동레버스틱의 조절에 의하여 스톱퍼가 받침틀의 래크와 이맞물림을 해제할 수 있고 또한 스톱퍼가 래크에 임의의 위치에서 이맞물림이 유지될 수 있도록 됨을 목적으로 한다.

과제의 해결 수단

[0009] 본 고안은 탁자에 가변다리들이 형성되어, 지면으로부터 탁자의 높이를 조절할 수 있는 높낮이 조절가능한 탁자에 있어서, 위쪽에는 탁자가, 아래쪽에 사각의 받침틀이 형성되고, 상기 탁자와 받침틀의 사이에 한쌍의 가변다리가 형성되어, 받침틀에 대하여 탁자의 높낮이를 조절할 수 있도록 되어 있다.

[0010] 또한, 본 고안은 탁자와 받침틀의 사이에 한쌍의 가변다리의 한쪽들이 탁자와 받침틀에 위쪽후방힌지와 아래쪽후방힌지를 중심으로 유동가능하게 형성되고, 또한 다른 한쪽들은 위쪽로울과 아래쪽로울들이 형성되어, 각각의 위쪽레일빔과 아래쪽레일빔에 구름이동가능하게 형성되어, 받침틀에 대하여 탁자의 높낮이를 조절할 수 있도록 되어 있다.

[0011] 또한, 본 고안은 받침틀에 일정길이의 래크가 형성되고, 또한 가변다리의 다른 한쪽에 스톱퍼가 형성되어, 가변다리의 스톱퍼가 받침틀의 래크의 임의의 위치에서 유지 고정될 수 있도록 하여, 사용자의 선택에 따라서, 받침틀에 대하여 탁자의 높낮이가 조절될 수 있도록 되어 있다.

[0012] 또한, 본 고안은 가변다리의 스톱퍼에 길이가 긴 작동레버스틱이 고정되어, 사용자가 서 있는 자세에서 작동레버스틱의 조절에 의하여 스톱퍼가 받침틀의 래크와의 이맞물림을 해제와 스톱퍼가 래크에 임의의 위치에서 이맞물림이 유지될 수 있도록 되어 있다.

고안의 효과

[0013] 이상과 같이, 본 고안은 수평의 탁자의 아래에 한쌍의 가변 다리를 형성하며 다리의 한쪽들이 탁자와 지면에 접촉되는 받침틀의 힌지에 유동가능하게 장착하고 또한 다른 한쪽들은 상기 탁자와 받침틀에 구름접촉으로 이동가능하게 하여, 다리들이 한쪽의 받침틀과 탁자를 중심으로 다른 한쪽으로 이동가능하게 함으로써, 결국 받침틀에 대하여 탁자의 높이를 조절가능하게 할 수 있고, 또한 상기 다른 한쪽의 다리들이 받침틀에 형성한 래크에 스톱퍼에 의하여 임의의 위치에 고정될 수 있도록 함으로써, 받침틀에 대하여 탁자의 높이에 따라서, 다리에 형성한 스톱퍼가 받침틀의 래크의 임의의 위치에서 고정될 수 있도록 하여, 사용자의 작업환경에 따라서 적절히 높이를 조절 선택할 수 있다.

도면의 간단한 설명

[0014] 도 1 은 본 고안의 높낮이 조절가능한 탁자의 사시도,

도 2 는 본 고안의 높낮이 조절가능한 탁자의 측면도,

도 3 은 본 고안의 높낮이 조절가능한 탁자의 정면도,

도 4 는 본 고안의 높낮이 조절가능한 탁자에서 작동제어스틱을 작동한 상태도,

도 5 는 본 고안의 높낮이 조절가능한 탁자에서 작동제어스틱을 작동한 상태의 배면도,

도 6 은 본 고안의 높낮이 조절가능한 탁자의 다른 예의 사시도.

고안을 실시하기 위한 구체적인 내용

[0015] 본 고안의 구체적인 예를 첨부도면에 의하여 상세히 설명하면 아래와 같다.

[0016] 도 1 내지 도 5에 나타낸 바와 같이 본 고안의 높낮이 조절가능한 탁자는, 위쪽에는 물건 등을 얹을 수 있는 평편한 탁자(10)가, 또한 아래쪽에 지면과 접촉되는 사각의 받침틀(20)이 형성되고, 또한 상기 탁자(10)와 받침틀(20)의 사이에는 지면으로부터 탁자의 높이를 조절할 수 있는 1쌍의 가변다리(30)가 형성되어 있다.

[0017] 상기 탁자(10)의 바로 아래에 길이방향으로 긴 단면이 자 형상인 위쪽레일빔(11)들이 간격을 두고 나란히 형성되어 있다. 상기 위쪽레일빔(11)들에는 후술하는 가변다리(30)들의 위쪽로울(31)들이 구름이동가능하게 장착되고, 또한 상기 위쪽레일빔(11)의 후방에는 후술하는 가변다리(30)들이 위쪽후방힌지(12)들에 의하여 유동가능하게 장착된다.

[0018] 다음, 사각의 받침틀(20)은 대량 장방형상의 틀체로서, 받침틀(20)의 길이방향으로 나란하게 아래쪽레일빔(21)들이 형성되어 있다. 상기 아래쪽레일빔(21)들은 상기 탁자(10)의 위쪽레일빔(11)들과 나란하게 형성된다.

[0019] 또한 상기 받침틀(20)의 아래쪽레일빔(21)의 한쪽에 일정길이로 이빨들이 형성된 래크(22)가 용접 등의 고정수단에 의하여 고정되어 있다.

[0020] 이 래크(22)는 후술하는 가변다리(30)의 한쪽에 형성한 스톱퍼(33)가 이맞물려서 걸림 및 해제될 수 있도록 한다.

[0021] 그리고, 상기 받침틀(20)의 사방에는 지면과 접촉되는 받침지지구(23)들이 형성되어 있다.

[0022] 다음, 상기 탁자(10)와 받침틀(20)들의 사이에 가변다리(30)들이 형성되는데, 상기 가변다리(30)들은 중앙에 중앙힌지(34)에 의하여 유동가능한 대략 X자 형상의 링크로 절첩가능하게 형성되어, X자 형상의 링크 1쌍이 나란하게 탁자(10)와 받침틀(20)들의 사이에 장착된다.

[0023] 즉, 탁자(10)와 받침틀(20)의 사이에 한쌍의 가변다리(30)의 한쪽들이 탁자(10)와 받침틀(20)에 위쪽후방힌지(12)와 아래쪽후방힌지(13)를 중심으로 유동가능하게 형성되고, 또한 다른 한쪽들은 위쪽로울(31)과 아래쪽로울(32)들이 형성되어, 각각의 위쪽레일빔(11)과 아래쪽레일빔(21)에 구름이동가능하게 형성되어, 받침틀(20)에 대하여 탁자(10)의 높낮이를 조절할 수 있도록 되어 있다.

[0024] 그리고, 상기 가변다리(30)의 다른 한쪽에 스톱퍼(33)가 형성되어 있는데, 상기 스톱퍼(33)는 힌지브래킷(40)이 볼트(42)등의 고정수단에 의하여 고정된다. 또한 상기 힌지브래킷(40)의 중앙의 힌지축(41)에 스톱퍼(33)가 고정되고, 또한 스톱퍼(33)는 힌지축(41)에 감겨진 비틀림스프링(50)에 의하여 탄력있게 유지될 수 있도록 되어 있다. 상기 비틀림스프링(50)은 스톱퍼(33)가 받침틀(20)의 래크(22)쪽으로 부세하는 힘이 가하여지도록 하여, 스톱퍼(33)가 래크(22)의 이빨에 탄력있게 유지될 수 있도록 되어 있다.

[0025] 또한, 상기 비틀림스프링(50)은 힌지브래킷(40)의 힌지축(41)에 감겨져 스프링의 한쪽 끝단은 힌지브래킷(40)의 유지되고 또한 다른 한쪽은 스톱퍼(33)에 유지고정되어, 스톱퍼(33)가 래크(22)의 이빨쪽으로 탄력있게 유지될 수 있도록 한다.

[0026] 또한, 가변다리(30)의 스톱퍼(33)에 길이가 긴 작동레버스틱(60)이 고정되어, 사용자가 서 있는 자세에서 작동레버스틱(60)의 조절에 의하여 스톱퍼(33)가 받침틀(20)의 래크(22)와의 이맞물림을 해제와 스톱퍼(33)가 래크(22)에 임의의 위치에서 이맞물림이 유지될 수 있도록 되어 있다.

[0027] 따라서, 도 3과 같은 상태에서, 작동레버스틱(60)을 오른쪽으로 밀면, 가변다리(30)의 힌지브래킷(40)에 탄력있게 유지된 스톱퍼(33)가 도 4에 나타낸 바와 같이 받침틀(20)의 래크(22)의 이빨로부터 분리시킬 수 있다. 이 상태에서 탁자(10)를 도 4에서 오른쪽으로 조금 밀어서 스톱퍼(33)가 래크(22)의 적당한 위치의 이빨에서 작동레버스틱(60)을 원래의 상태로 놓으면 탁자(10)가 도 3의 상태 보다는 높은 위치로 가변시킬 수 있다.

[0028] 반대로, 이 상태에서 탁자(10)를 도 4에서 왼쪽으로 조금 밀어서 스톱퍼(33)가 래크(22)의 적당한 위치의 이빨에서 작동레버스틱(60)을 원래의 상태로 놓으면 탁자(10)가 도 3의 상태 보다는 낮은 위치로 가변시킬 수 있다.

[0029] 이상과 같이 받침틀(20)에 대하여 탁자(10)의 높이에 따라서, 다리에 형성한 스톱퍼(33)가 받침틀(20)의 래크(22)의 임의의 위치에서 고정될 수 있도록 하여, 사용자의 작업환경에 따라서 적절히 높이를 조절 선택할 수 있다.

[0030] 도 6에서는 받침틀(20)의 아래쪽레일빔(21)들에 위쪽레일빔과 마찬가지로, 길이방향으로 긴 단면이 자 형상인 레일빔(21)들이 간격을 두고 나란히 형성되도록 하여도 된다. 상기 레일빔(21)은 가변다리(30)의 아래쪽로울(32)들이 발이 밟히는 등으로부터 보호할 수 있다.

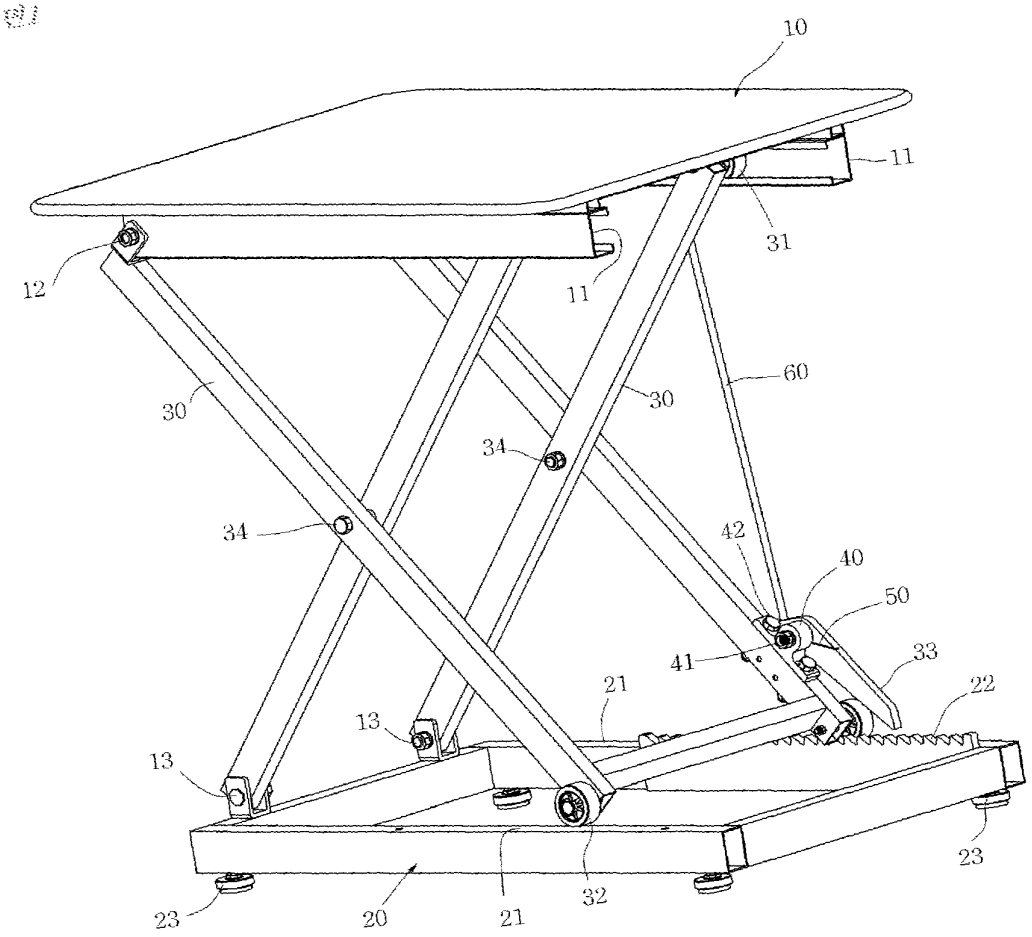
부호의 설명

[0031]

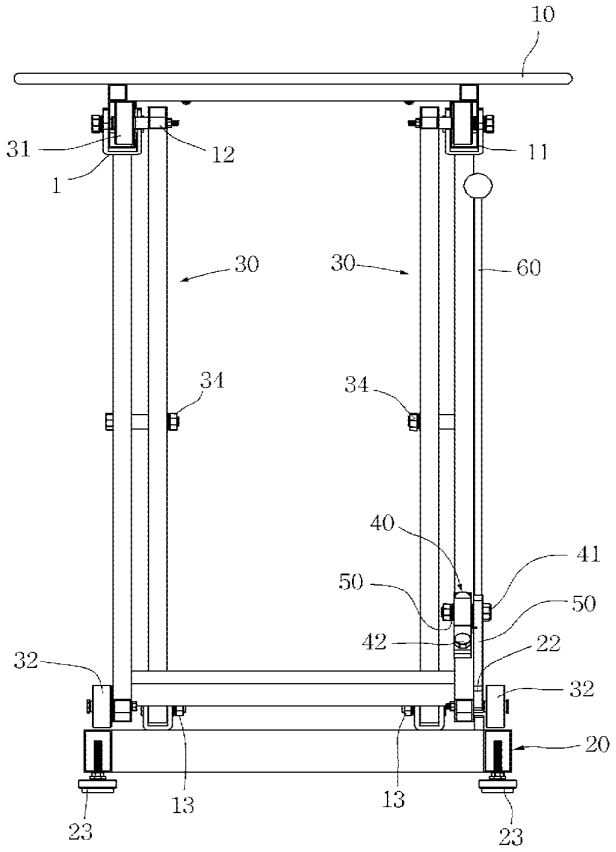
10 : 탁자	11 : 위쪽레일빔
12 : 위쪽후방힌지	13 : 아래쪽후방힌지
20 : 받침틀	21 : 아래쪽레일빔
22 : 래크	23 : 받침지지구
30 : 가변다리	31 : 위쪽로울
32 : 아래쪽로울	33 : 스톱퍼
34 : 중앙힌지	40 : 힌지브래킷
41 : 힌지	42 : 볼트
50 : 비틀림스프링	60 : 작동레버스틱

도면

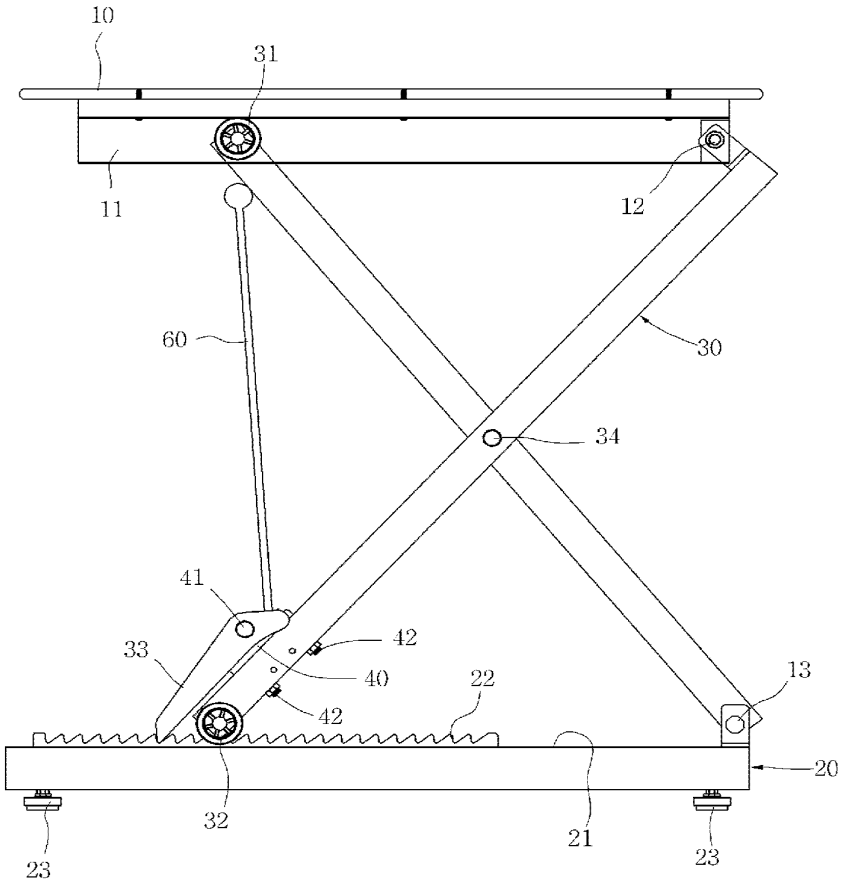
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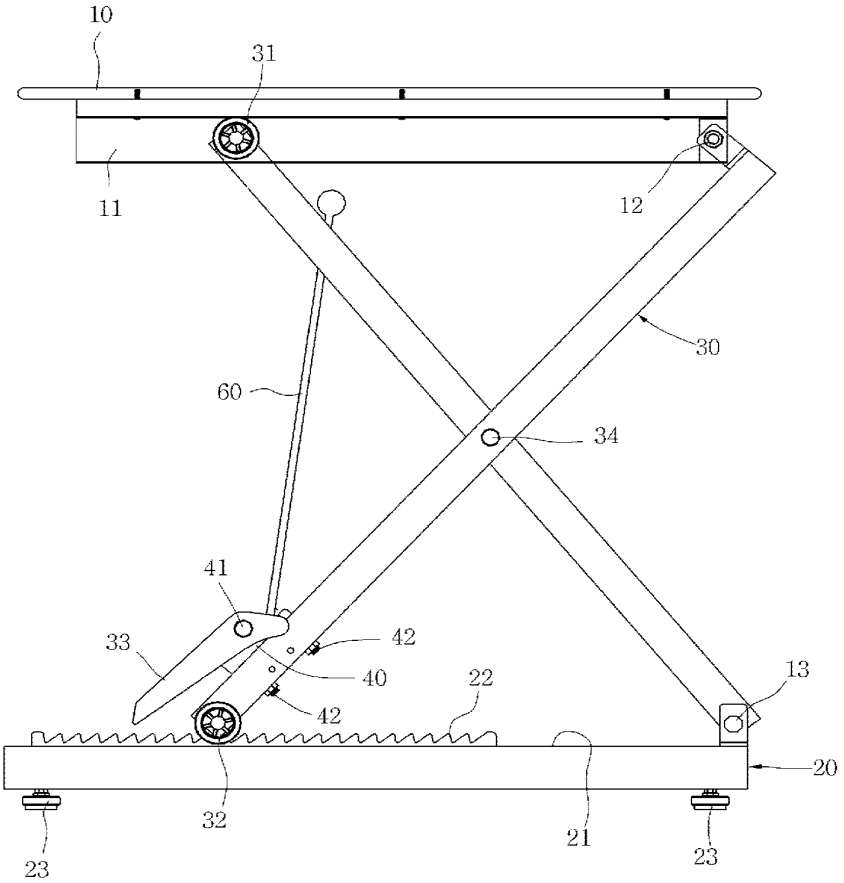
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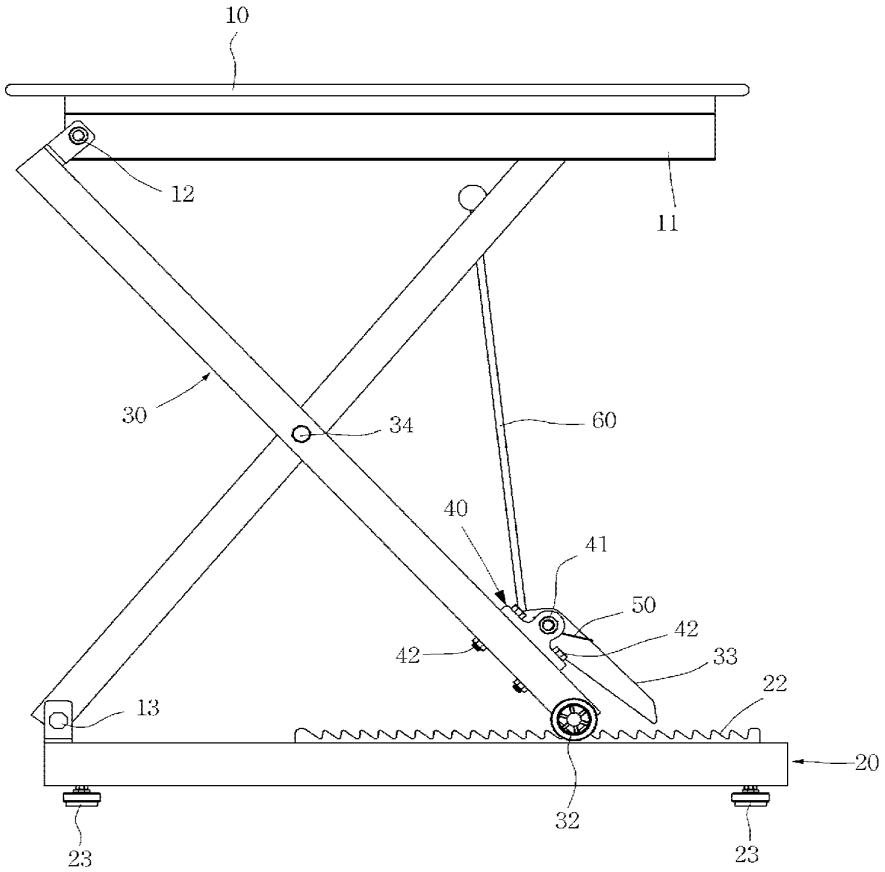
도면3



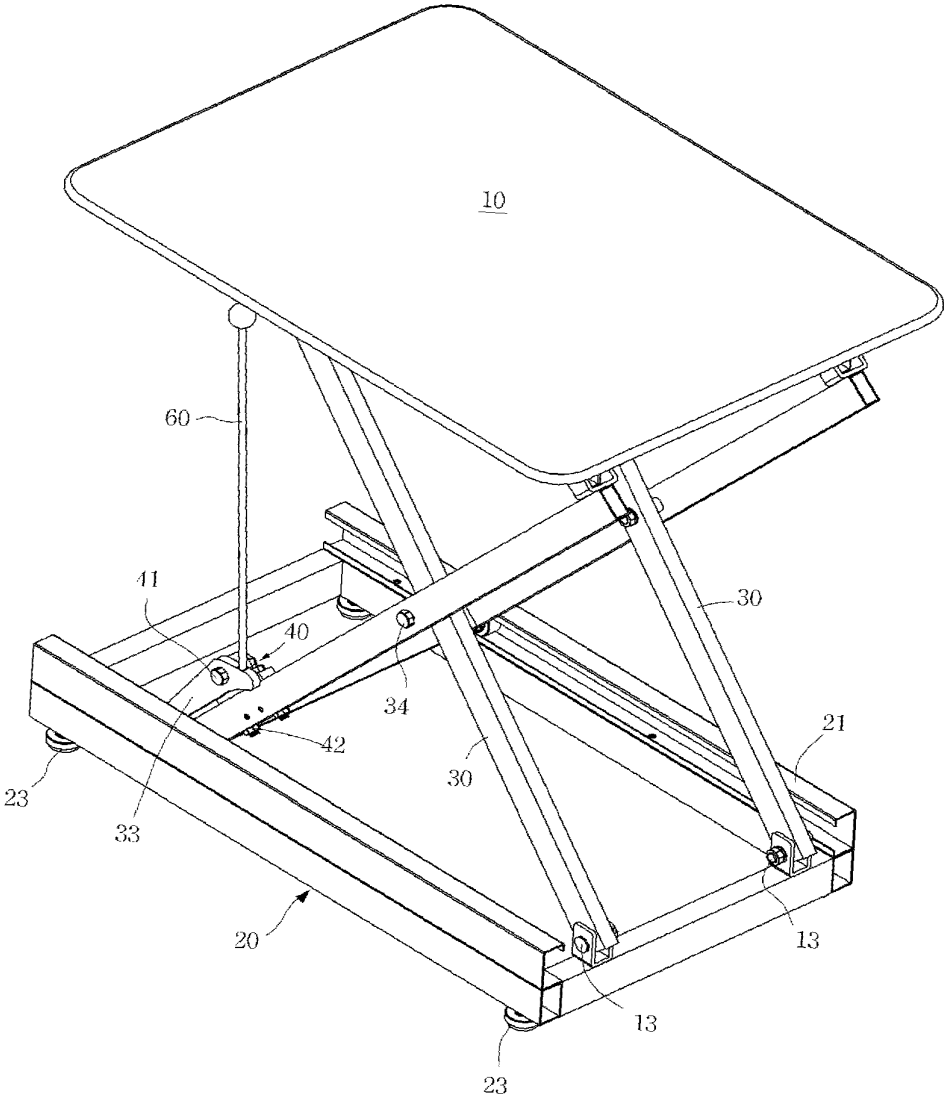
도면4



도면5



도6



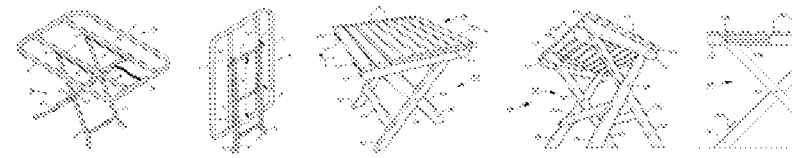
Patents

Fold type portable table

Abstract

The present invention provides a folding type portable table which can be horizontally installed in the ground that is uneven as well as flat. Moreover, a position of the table can be stably maintained, and when folding a leg of the table, the folded leg is fixated to the table not to be shaken or moved. Therefore, the table can be folded so that the volume thereof is minimized to the fullest. According to the present invention, the folding type portable table comprises: a pair of main frames; a pair of auxiliary frames; and a connection member.

Images (12)



Classifications

- A47B3/08 Folding or stowable tables with legs pivoted to top or underframe

View 6 more classifications

KR101635611B1
South Korea

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Other languages: Korean

Inventor: 정석태

Worldwide applications

2015 KR

Application KR1020150165214A events

2015-11-25 Application filed by 주식회사 티피에스
2015-11-25 Priority to KR1020150165214A
2016-07-11 Application granted
2016-07-11 Publication of KR101635611B1

Info: Patent citations (2), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Claims (5)

Hide Dependent translated from Korean

A pair of main frames symmetrically coupled to opposite side edge portions of the bottom surface of the upper plate;
A pair of auxiliary frames which are coupled to the bottom surface of the upper plate so as to be spaced apart from each other by an interval corresponding to the width of the main frames and the inner and outer legs, ;
Wherein an upper end of each of the outer legs is rounded and chamfered to be pivotally coupled to both inner side surfaces of the main frame and both upper ends of the inner leg are rounded and chamfered And is connected to a connection member which is inserted into and out of the two passages so as to be in contact with the outer surface of the subframe. delete delete delete delete

Description

translated from Korean

Folding portable table {FOLD TYPE PORTABLE TABLE}

The present invention can be used to place the table horizontally in a flat or uneven place, to support the posture of the table in a stable manner, and to hold the folded legs on the table so that the folded legs do not move or move when the table legs are folded. And an improved folding portable table capable of folding the volume of the table as small as possible.

The folding portable table has the advantage of being easy to carry and store and easy to install because the table is reduced in volume when the leg is folded.

The folding type portable table is disclosed in Korean Patent No. 10-1487184 (portable multi-table), Korean Patent No. 10-1487184, Korean Utility Model No. 20-2009-0012905 (folding portable table) 20-2009-0012905 (hereinafter referred to as "background technology").

SUMMARY OF THE INVENTION The present invention has been made to improve the background art of the prior art described above, and the background art described above will be described before describing the present invention in detail.

FIG. 1 is a perspective view showing a state where a table is installed in the background art, and FIG. 2 is a perspective view showing a folded state of the table leg of FIG. 1. Referring to FIG.

The object of the background art is to reduce the cost of logistics by making it possible to load a large amount when carrying the portable table 10 and to reduce the cost of all parts of the top plate as shown in Figure 1 when the legs of the portable table 10 are unfolded So as to be supported on the legs so as to achieve stability.

One of the legs 22 of the X-shaped leg 20 is pivotally connected to the bottom surface of the upper frame 12 using a hinge 14, and the other leg 21 is connected to the upper The guide rod 24 is coupled to the guide plate 24 and then the guide rod 24 is coupled to the guide 13 attached to the bottom surface of the upper plate frame 12 to lift one side of the upper plate 11. The other leg 21 is folded and the guide rod 24 of the one leg 22 moves toward the hinge 13 along the guide 13 so that the X-shaped leg 20 is moved toward the bottom face of the upper frame 12 It is characterized by being folded.

Reference numeral 11 denotes a top plate. Reference numeral 23 denotes a pivot for connecting the one leg 22 and the other leg 21 so as to pivot. Reference numeral 25 denotes a tensile spring having a tensile force for pulling the guide rod 24 therein.

When the X-shaped leg 20 is folded toward the bottom of the upper frame 12 with the hinge 14 as the center, the volume of the table 10 is reduced so that the loading space of the table is further expanded it is effective.

One of the legs 22 of the table of the background art is pivotally coupled to the upper frame 12 using the hinge 14 to support the upper plate 11 while the other leg 21 is connected to the guide rod 24 The guide rod 24 is moved along the guide 13 to make the table unstable and the X-shaped legs 20 The axes of both legs are not superimposed on each other due to the interference of the guide rods 24 protruded out of the guide 13 when folded, There is a problem in that it is structurally weak such that the leg portion of the opposite side of the hinge 14 is severely moved or a gap is generated due to a slight force,

In addition, when the table of the background art is installed on a rugged floor, since the height adjusting member such as a stone is inserted under the bridge or the floor must be pinched by piling up the floor, there is a problem that the posture of the table becomes unstable as well as inconvenient and troublesome. And propose this through the present invention.

The present invention has been made in view of all the problems of the background art, and it is an object of the present invention to provide a foldable portable table capable of installing a table horizontally without using a separate height adjusting member, .

Another object of the present invention is to provide a foldable portable table which can securely fix the legs when the table is installed and fix the folded legs when the legs of the table are folded to facilitate carrying and storing.

Another object of the present invention is to provide a foldable portable table capable of more firmly and stably supporting the table by firmly fixing the four folding legs to the table.

According to an aspect of the present invention,

A pair of main frames symmetrically coupled to opposite side edge portions of the bottom surface of the upper plate;

A pair of subframes having openings on one side and coupled to the bottom of the top plate so as to be spaced apart from each other by a width covering the inner and outer legs between the two main frames;

In joining the pair of inner and outer legs pivotably coupled to the bottom of the upper plate, both inner legs are pivotally coupled between the outer legs, And a connecting member pivotally coupled to the inside of the frame and into and out of the passage can be realized by an inner leg coupled to the upper portions of the both inner legs.

A challenge to stably support the table of the present invention is realized by connecting the inner and outer legs supporting the bottom of the table to be supported by the inner surface of the main frame and the inner legs by the outer surface of the auxiliary frame it is characterized by.

The problem of minimizing the height of the table of the present invention is realized by designing the inner and outer legs so that both axes of the inner and outer legs can be folded side by side and the widths of the inner and outer legs, Features ...

A problem to be solved for installing the table of the present invention horizontally on a rough surface is that the above-mentioned passage is provided in the longitudinal direction of the auxiliary frame, and a plurality of latching jaws are provided in the passage, To adjust the level of the table.

Since the inner and outer legs are inserted and fixed between the main frame and the auxiliary frame with the inner and outer legs juxtaposed, the table can be easily carried, handled and stored,

Further, in the present invention, when the table is used, since the outer legs of the extended X-shaped legs are supported by the inner surface of the main frame and the inner legs are supported by the outer surface of the auxiliary frame, the table can be firmly and firmly fixed,

In addition, the present invention can securely fix the plane of the table horizontally and stably even on uneven ground as well as on a flat floor by selectively fixing the connecting member to a specific one of the plurality of latching jaws provided in the passageway,

In addition, the present invention can effectively implement both the function of folding the legs and the function of supporting the table while the connecting member is in or out of the passageway when folding or installing the legs, and also the inner legs The two axes of the inner / outer legs are superimposed in parallel, and the volume of the table is most effectively reduced.

1 is a perspective view illustrating a state in which a conventional folding table is installed,
Fig. 2 is a perspective view illustrating a state in which the leg of the table shown in Fig. 1 is folded,
3 is a perspective view illustrating an example of using a folding type portable table according to the present invention,
Fig. 4 is a perspective view of the table shown in Fig. 3,
FIG. 5A is a sectional view taken along line AA in FIG. 3,
Fig. 5B is a view similar to Fig. 5A. Fig. 5B is a sectional view of a table adopting a modification example of an auxiliary frame,
FIG. 6A is a front view exemplifying the front view of the table of the present invention; FIG.
FIG. 6B is a side sectional view of the auxiliary frame attached to the bottom of the table of the present invention,
Fig. 6C is a view similar to Fig. 6B, showing a modification of the auxiliary frame,
7A to 7C are side cross-sectional views of a table illustrating a folding process of a table leg according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS Hereinafter, preferred embodiments of a foldable portable table according to the present invention will be described in detail with reference to the accompanying drawings.

3 is a perspective view illustrating an example of using the folding type portable table according to the present invention. FIG. 4 is a perspective view of the table shown in FIG. 3, An upper plate 110, and an X-shaped leg 120 pivotally coupled to the inner / outer legs 122 and 121.

6A is a front view of a table according to the present invention. FIG. 6A is a front view of a table according to the present invention. Referring to FIG. 6A, And an auxiliary frame 112 is coupled between the main frames 111 symmetrically with the main frame 111 at a predetermined distance T away from the main frame 111. [

The distance T between the two frames 111 and 112 is the sum of the thicknesses of the inner / outer legs 122 and 121 described above.

Referring to FIG. 6B, FIG. 6B is a sectional side view of the auxiliary frame attached to the bottom of the table according to the present invention. In the auxiliary frame 112, the height of the main frame 111 (H), and has a passage 112a whose one side is open in the longitudinal direction.

6C is a cross-sectional view illustrating a modification example of the auxiliary frame 112. The auxiliary frame 112 is provided with a plurality of locking protrusions 112c in the passage 112 described above, } Are exemplified.

When the connecting member 112b described below is selectively coupled to the plurality of latching protrusions 112c described above, the level of the table can be adjusted only by the legs without using the height adjusting member.

It is preferable that the length of the auxiliary frame 112 is approximately 2/3 of the length of the main frame 111. However, if the length of the auxiliary frame 112 is too short, the coupling member 112b may be pulled out of the passage 112a and the table may collapse.

Referring to FIG. 5A, FIG. 5A is a cross-sectional view taken along line A-A of FIG. 3, and shows a state of engagement between the X-shaped leg 120 and the upper plate 110 shown in FIG.

The X-shaped legs 120 are each formed of a pair of inner and outer legs 122 and 121 such that the inner legs 122 are pivoted by the pivot 123 between the two outer legs 121 Lt; / RTI >

Reference numerals 121a and 122a denote fixing members for connecting the pair of inner and outer legs 122 and 121 to each other. The fixing members 121a and 122a have two outer legs 121, The ecology that is in contact with the inner surface of the frame 111 is maintained and the length is adjusted so that both of the pair of outer legs cooperate with each other.

The fixing member 122a described above is fixed between the inner legs 122 by adjusting the length of the fixing member 122a so as to be in contact with the inside of the inner legs 122 on the outer surface of the auxiliary frame 112, (122) can be interlocked simultaneously.

The connecting member 112b is connected to the upper side of the pair of inner legs 122 so that the connecting member 112b can enter into the passage 112a.) Of the outer surface of the base plate (2).

The two outer legs 121 are pivotally coupled to the inner surface of both main frames 111 and have a fixing member 121a having the same length as the outer surface of the auxiliary frames 112 4) so that both outer legs 121 can move at the same time.

Each of the upper and lower ends of the inner and outer legs 122 and 121 is chamfered in a rounded shape so that the inner and outer legs 122 and 121 can be smoothly rotated when the outer leg is rotated about the pivot.

The table leg folding example of the present invention constructed as described above will be described with reference to the accompanying drawings.

7A to 7C are sectional side views of a table illustrating the folding process of the table leg according to the present invention. When the upper plate 110 is lifted in the direction of the arrow, The connecting member 112b inserted into the passage 112a is pulled out of the passage.

The inner leg 122 separated from the passage 112a is rotated around the pivot 123 as shown in FIG. 7B so that the axes of the legs 121 and 122 are aligned, The entire X-shaped leg 120 is brought into close contact with the bottom surface of the upper plate 110 and simultaneously the main frame 111 and the auxiliary frame 112 are rotated together with the pivot 111a, And is inserted and fixed.

In other words, when the X-shaped leg 120 is inserted between the main frame 111 and the auxiliary frame 112, the height of the X-shaped leg 120 is equal to the height H of the main frame 111, The two outer side surfaces of the X-shaped leg 120 are held between the main and auxiliary frames 111 and 112 and fixed to the top plate.

An example of use according to the installation of the table of the present invention will be described.

In the installation of the table 100, the legs of the table 100 are installed as shown in Figs. 3 and 5A by the reverse order of the table folding described above.

The outer side surfaces of the outer legs 121 of the X-shaped legs 120 are brought into contact with the inner surfaces of the two main frames 111 while the table 100 is installed, 122 are in contact with each other, so that the legs 121, 122 can be more firmly supported.

5B and 6C, when the auxiliary frame 112 having a plurality of locking protrusions 112c is used in the passage, even if the ground surface is uneven, only the X-shaped legs are used without using the height adjusting member The upper plate 110 of the table can be supported horizontally and stably.

The present invention differs from the background art described above in the following points.

(1) The table of the background art is susceptible to lateral pressure because the guide rods flow along the guide in the guide while the outer surface of the outer leg 121 of the present invention is applied to the inner surface of both main frames 111, Since the inner side surface of the auxiliary frame 122 is in contact with the outer side surfaces of the auxiliary frames 112, the legs and the upper plate can be stably and firmly supported.

(2) According to the present invention, the connection member 112b is selectively coupled to any one of the plurality of engagement protrusions 122c provided in the passage 112a, so that the table 100 can be rotated even in a place where the ground is flat, it can be installed horizontally, but this action can not be found in the background art.

(3) In the present invention, when the X-shaped leg 120 is folded, the side surface of the X-shaped leg 120 is fixed so as not to be moved by the two frames 111 and 112, but can not be found in the background art.

(4) The table legs according to the present invention can be most effectively reduced in thickness because the both legs of the inner / outer legs are folded in a side-by-side manner when the folded table legs are folded so that the thicknesses of the inner / outer legs are unified.

As described above, the present invention overcomes all the problems of the background art and can realize a more advanced folding portable table.

While the present invention has been particularly shown and described with reference to exemplary embodiments, it is to be understood that the invention is not limited to the disclosed exemplary embodiments, It is to be noted that the examples are included in the claims defined in the following claims and in the true meaning of the technical idea intended by the present inventor.

100: Table 110: Top plate
111: main frame 111a: pivot
112: auxiliary frame 112a: passage
112b: connecting member 112c:
120: X-shaped leg 121: outer leg
122: inner leg 123: pivot
121a: Fixing member 122a: Fixing member
H: Height of main frame
T: Spacing between mainframe and subframe

Patent Citations (2)

Publication number	Priority date	Publication date	Assignee	Title
KR900009486Y1 *	1987-08-31	1990-10-13	구세모	Height adjustable apparatus in table
JPH08140742A *	1994-11-18	1996-06-04	Takanashi Sangyo Kk	Furniture with foldable leg

Family To Family Citations

* Cited by examiner, † Cited by third party

Similar Documents

Publication	Publication Date	Title
US7765941B2	2010-08-03	Collapsible support stand for barbecue stove
KR200464934Y1	2013-01-28	Portable foot rest
US20140131138A1	2014-05-15	Folding stool
KR101101187B1	2012-01-03	Furniture with folding support
US9167893B2	2015-10-27	Folding table
KR20210001218U	2021-06-01	Stabilizing and combining structure in unfolding the folding tables
KR101803436B1	2017-12-28	Functional extension table
KR20150054374A	2015-05-20	Sliding Type Extensible Table
KR101635611B1	2016-07-11	Fold type portable table
KR20130007433U	2013-12-30	Braket for fixing oblique line type leg of furniture and hinge by using the same
KR20130005155U	2013-08-30	Collapsible legs and frame structure of the table
KR200337325Y1	2004-01-03	a fold up wooden bed
KR200450890Y1	2010-11-08	Fold type portable bed
US6511122B1	2003-01-28	Foldable chair having a reduced storage space in a folded state and adjustable backrest inclination
KR101554111B1	2015-09-17	Frame structure for folding type furniture
US8118358B2	2012-02-21	Chair
KR200357730Y1	2004-07-31	Portable folding chair
KR20120008565U	2012-12-12	Portable table
KR101654910B1	2016-09-06	Folding table having four plate
WO2017217707A1	2017-12-21	Folding bed
US9566948B2	2017-02-14	Enhanced folding bed bracket
KR20110011683U	2011-12-19	Convertable handy table
JP4847217B2	2011-12-28	Bunk beds
US20210172194A1	2021-06-10	Tent support
KR102132306B1	2020-07-09	Folding ladder

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title

KR1020150165214A	2015-11-25	2015-11-25	Fold type portable table

Applications Claiming Priority (1)

Application	Filing date	Title
KR1020150165214A	2015-11-25	Fold type portable table

Legal Events

Date	Code	Title	Description
2016-06-20	E701	Decision to grant or registration of patent right	
2016-06-27	GRNT	Written decision to grant	
2019-12-09	FPAY	Annual fee payment	Payment date: 20191209 Year of fee payment: 4

Concepts

machine-extracted

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corresponding		claims	1	0.000

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(56) 선행기술조사문헌
KR2019900009486 Y1*
JP08140742 A*
*는 심사관에 의하여 인용된 문헌

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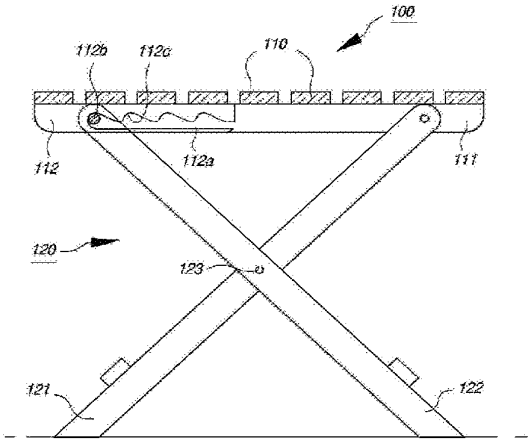
전체 청구항 수 : 총 1 항 심사관 : 이성희

(54) 발명의 명칭 **절첩식 휴대용 테이블**

(57) 요 약

본 발명은 지면이 평탄한 곳은 물론 울퉁불퉁한 곳에도 테이블을 수평하게 설치할 수 있고, 테이블의 자세를 안정되게 지지할 수 있으며, 테이블 다리를 접었을 때 접힌 다리가 흔들리거나 움직이지 않도록 테이블에 고정할 수 있고, 테이블의 부피를 최대한 작게 절첩할 수 있는 개량된 절첩식 휴대용 테이블을 제안한다.

대 표 도 - 도5b



(52) CPC특허분류
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A47B 2003/006 (2013.01)
A47B 2200/002 (2013.01)
A47B 2200/0035 (2013.01)

명 세 서

청구범위

청구항 1

상판의 저면 양측 가장자리 부분에 대칭되게 결합되는 한 쌍의 메인프레임과;

일측이 개방된 통로의 경로상에 일정간격으로 배치되는 걸림턱을 갖추고, 상기 양 메인프레임과 내측 및 외측다리를 포갠 폭에 상응하는 간격으로 이격되도록 상판의 저면에 결합되는 한 쌍의 보조프레임과;

각각 한 쌍으로 이루어진 내외측 다리가 서로 피봇되도록 결합되고, 상기 외측 다리의 양 상측단은 둥글게 모따기하여 상기 메인프레임의 양 내측면에 피벗되게 결합하고, 상기 내측다리의 양 상측단은 둥글게 모따기하여 상기 보조 프레임의 외측면에 접해지도록 상기 양 통로사이로 출입하는 연결부재로 연결되어 구성된 것을 특징으로 하는 절첩식 휴대용 테이블.

청구항 2

삭제

청구항 3

삭제

청구항 4

삭제

청구항 5

삭제

발명의 설명

기 술 분 야

[0001] 본 발명은 지면이 평탄한 곳은 물론 울퉁불퉁한 곳에도 테이블을 수평하게 설치할 수 있고, 테이블의 자세를 안정되게 지지할 수 있으며, 테이블 다리를 접었을 때 접힌 다리가 흔들리거나 움직이지 않도록 테이블에 고정할 수 있고, 테이블의 부피를 최대한 작게 절첩할 수 있는 개량된 절첩식 휴대용 테이블에 관한 것이다.

배 경 기 술

[0002] 절첩식 휴대용 테이블은 다리를 접으면 테이블의 부피가 작게 축소되므로 휴대 및 보관이 용이하고, 설치가 간편한 장점이 있다.

[0003] 절첩식 휴대용 테이블은 대한민국 등록특허 제10-1487184호(휴대용 조립식 멀티테이블), 대한민국 등록특허 제10-1487184호, 대한민국 공개실용신안 제20-2009-0012905호(절첩식 휴대용 탁자) 및 대한민국 공개번호 제20-2009-0012905호 (이하 '배경기술'이라 함) 등이 공지되어 있다.

[0004] 본 발명은 전술한 종래기술 중 배경기술을 개선하기 위해 창안된 것으로, 본 발명을 구체적으로 설명하기에 앞서 전술한 배경기술에 대해 설명한다.

[0005] 도 1 및 도 2를 참조하면, 도 1은 배경기술에 개시된 탁자의 설치상태를 도시한 사시도이고, 도 2는 도 1의 탁자 다리를 접은 상태를 도시한 사시도이다.

[0006] 배경기술의 목적은 휴대용 탁자(10)를 운반할 때 많은 량을 적재할 수 있도록 하여 물류비용을 절감하고, 휴대용 탁자(10)의 다리를 펼쳤을 때, 도 1에 도시된 바와 같이 상판의 모든 부위가 다리에 지지되도록 하여 안정성

을 도모하기 위한 것이다.

[0007] 목적을 해결하기 위한 구현수단으로는 상판 프레임(12)의 저면에 X자형 다리(20)의 일측 다리(22)를 힌지(14)를 사용하여 피벗되게 결합하고, 타측 다리(21)는 그 상단에 가이드 봉(24)을 결합한 뒤 가이드 봉(24)을 상판 프레임(12)의 저면에 부착된 가이드(13)속으로 결합하여 상판(11)의 한쪽 부분을 들어올리면, 힌지(13)를 중심으로 타측 다리(21)가 절첩됨과 동시에 일측 다리(22)의 가이드 봉(24)이 가이드(13)를 따라 힌지(13)쪽으로 이동하면서 X자형 다리(20)가 상판 프레임(12)의 저면쪽으로 절첩되도록 구현한 것에 특징이 있다.

[0008] 도면에서, 참조부호 11는 상판이고, 23은 일측 다리(22)와 타측 다리(21)가 피벗되도록 연결시키기 위한 피벗이고, 25는 가이드 봉(24)을 잡아당기는 인장력이 내재된 인장스프링이다.

[0009] 전술한 바와 같이 구성된 배경기술은 X자형 다리(20)가 힌지(14)를 중심으로 상판 프레임(12)의 저면쪽으로 접으면 탁자(10)의 부피가 작게 축소되므로 탁자의 적재공간을 더 확장하는 효과가 있다.

[0010] 그러나, 배경기술의 탁자의 다리 중 일측 다리(22)는 힌지(14)를 사용하여 상판 프레임(12)에 피벗되도록 결합되어 상판(11)을 지지하고, 타측 다리(21)는 가이드 봉(24)이 결합되어 상판(11)의 하중을 지지하지만, 탁자에 횡방향 압력이 가해지면 가이드 봉(24)이 가이드(13)를 따라 움직이게 되어 테이블을 자세가 불안정해 지고, 또한 X자형 다리(20)를 접을 때 가이드(13) 밖으로 돌출된 가이드 봉(24)의 간섭으로 양 다리의 축선이 나란하게 포개지지 않기 때문에 적재공간으 확장효과가 저하되고, 또한 다리가 완전히 접혔을 때 힌지(14)의 반대쪽 다리 부분이 사소한 힘에도 심하게 움직이거나 유격이 발생되므로 휴대나 보관이 불편하고, 힌지(14)부위가 쉽게 망실되는 등의 구조적으로 취약한 문제가 있다.

[0011] 이외에도 배경기술의 탁자는 지면이 울퉁불퉁한 곳에 설치할 경우, 다리 밑에 돌과 같은 높이조절용 부재를 끼우거나 지면을 파내어 탁자의 수평을 맞춰야 하므로 불편하고 번거로울 뿐만 아니라 탁자의 자세가 불안정해지는 문제점이 있어 본 발명을 창안하였고 이를 본 발명을 통해 제안하고자 한다.

발명의 내용

해결하려는 과제

[0012] 본 발명은 배경기술의 제반문제들을 감안하여 창안하게 된 것으로, 본 발명은 지면이 평탄한 곳은 물론 울퉁불퉁한 곳에도 별도의 높이조절 부재를 사용하지 않고 테이블을 수평하게 설치할 수 있는 절첩식 휴대용 테이블을 제공하려는 것이다.

[0013] 본 발명의 다른 목적은 테이블을 설치하였을 때 다리를 안정되게 고정시킬 수 있고, 테이블의 다리를 접었을 때 접힌 다리를 고정되도록 함으로써 휴대 및 보관을 용이하게 할 수 있는 절첩식 휴대용 테이블을 제공하려는 것이다.

[0014] 본 발명의 다른 목적은 절첩식 4개의 다리가 테이블에 견고하게 고정되게 함으로써 테이블을 보다 견고하고 안정되게 지지할 수 있는 절첩식 휴대용 테이블을 제공하려는 것이다.

과제의 해결 수단

[0015] 본 발명의 목적에 따른 테이블의 구현수단은,

[0016] 상판의 저면 양측 가장자리 부분에 대칭되게 결합되는 한 쌍의 메인프레임과;

[0017] 일측이 개방된 통로를 갖추고, 상기 양 메인프레임사이에 내측 및 외측다리를 서로 포갠 폭으로 이격되도록 상판의 저면에 결합되는 한 쌍의 보조프레임과;

[0018] 한 쌍으로 이루어진 내측 다리 및 외측 다리를 피봇가능하게 결합된 X자형 다리를 상판의 저면에 결합함에 있어, 양 외측 다리사이에 양 내측 다리를 피벗가능하게 결합하고, 양 외측 다리의 상단을 양 메인프레임의 내측에 피벗가능하게 결합하며, 상기 통로속으로 출입하는 연결부재를 상기 양 내측 다리의 상부에 결합되는 내측 다리에 의해 구현할 수 있다.

[0019] 본 발명의 테이블을 안정되게 지지하기 위한 해결과제는 테이블의 저면을 지지하는 내/외측 다리 중 외측 다리

는 메인프레임의 내면에 의해, 그리고 내측 다리는 보조프레임의 외면에 의해 지지되도록 연결함으로써 구현되는 것에 특징이 있다.

[0020] 본 발명의 테이블의 높이를 최소화하기 위한 해결과제는 내외측 다리의 양 축선이 나란하게 접힐 수 있게 하고, 양 축선이 나란하게 포개진 내외측 다리의 폭이 메인프레임의 높이 이내로 설계함으로써 구현되는 것에 특징이 있다..

[0021] 본 발명의 테이블을 울퉁불퉁한 지면에 수평하게 설치하기 위한 해결과제는 전술한 통로를 보조프레임의 길이방향으로 마련하되, 상기 통로내에 복수개의 걸림턱을 마련하여 특정 걸림턱에 연결부재를 선택적으로 결합함으로써 테이블의 수평을 조절하는 것에 특징이 있다.

발명의 효과

[0022] 본 발명은 내외측 다리가 포개진 상태로 메인프레임과 보조프레임사이에 삽입되어 고정되므로 테이블의 휴대나 취급 및 보관이 용이해지고,

[0023] 또한 본 발명은 테이블 사용시 펴진 X자형 다리의 외측 다리는 메인프레임의 내면에 의해, 그리고 내측 다리는 보조프레임의 외면에 의해 지지되므로 테이블을 튼튼하고 견고하게 고정시킬 수 있으며,

[0024] 또한 본 발명은 통로에 마련된 복수개의 걸림턱 중 특정 걸림턱에 연결부재를 선택적으로 고정시킴으로써 평탄한 지면은 물론 울퉁불퉁한 지면에서도 테이블의 평면을 수평하고 안정되게 설치할 수 있고,

[0025] 또한 본 발명은 다리를 접거나 설치할 때 연결부재가 통로속으로 혹은 밖으로 출입하면서 다리의 절첩기능과 테이블 지지기능을 모두 효과적으로 구현할 수 있을 뿐만 아니라 피벗에 의해 양 외측 다리사이에 연결부재로 연결된 내측 다리 가 결합되어 있으므로 내/외측 다리의 양 축선이 나란하게 포개져 테이블의 부피가 가장 효과적으로 축소되는 효과가 있다.

도면의 간단한 설명

[0026] 도 1은 종래의 절첩식 탁자를 설치한 상태를 예시한 사시도,

도 2는 도 1에 도시된 탁자의 다리를 접은 상태를 예시한 사시도,

도 3은 본 발명에 따른 절첩식 휴대용 테이블의 사용예를 예시한 사시도,

도 4는 도 3에 도시된 테이블를 저면에서 바라 본 사시도,

도 5a는 도 3의 A-A선 단면도,

도 5b는 도 5a와 유사한 도면으로, 보조프레임의 변경예를 채용한 테이블의 단면도,

도 6a는 본 발명의 테이블의 정면을 발췌하여 예시한 정면도

도 6b는 본 발명의 테이블 저면에 부착된 보조프레임을 발췌하여 측면에서 본 단면도,

도 6c는 도 6b와 유사한 도면으로, 보조프레임의 변경예를 예시한 단면도,

도 7a 내지 도 7c는 본 발명에 따른 테이블 다리의 절첩 과정을 예시한 테이블의 측단면도이다.

발명을 실시하기 위한 구체적인 내용

[0027] 이하, 본 발명에 따른 절첩식 휴대용 테이블의 바람직한 실시예를 첨부된 도면을 참조하여 상세히 설명한다.

[0028] 도 3 및 도 4를 참조하면, 도 3은 본 발명에 따른 절첩식 휴대용 테이블의 사용예를 예시한 사시도이고, 도 4는 도 3에 도시된 테이블을 저면에서 본 사시도로, 테이블(100)은 상판(110)과, 내/외측 다리(122)(121)가 피벗가능하게 결합된 X자형 다리(120)로 구성되어 있다.

[0029] 도 6a을 참조하면, 도 6a는 본 발명의 테이블을 정면에서 본 정면도로, 일정한 면적을 지닌 상판(110)과, 상판의 저면에 한 쌍으로 이루어진 메인프레임(111)을 상판(110)의 가장자리 부근에 각각 대칭되게 결합되어 있고, 양 메인프레임(111) 사이에 메인프레임(111)과 일정거리 이격거리(T)를 두고 상판에 대칭되게 보조프레임(112)

이 결합되어 있다.

[0030] 상기한 양 프레임(111)(112)간의 이격거리(T)는 전술한 내/외측 다리(122)(121)를 포갠 두께의 합으로 한다.

[0031] 도 6b를 참조하면, 도 6b는 본 발명의 테이블 저면에 부착된 보조프레임을 발췌하여 측면에서 본 단면도로, 전술한 보조프레임(112)은 도 6a에 도시된 바와 같이 메인프레임(111)의 높이(H)와 동일하게 이루어져 있고, 길이 방향으로 일 측이 개방된 통로(112a)를 구비하고 있다.

[0032] 도 6c을 참조하면, 도 6c는 도 6b와 유사한 도면으로, 보조프레임(112)의 변경예를 예시한 단면도로, 전술한 통로(112)에 복수의 걸림턱(112c)을 마련한 보조프레임(112)의 채용 예를 예시한 것이다.

[0033] 이하에서 설명되는 연결부재(112b)는 전술한 상기 복수개의 걸림턱(112c)에 선택적으로 결합하면 테이블의 수평을 높이조절 부재를 사용하지 않고 다리만으로 조절할 수 있다.

[0034] 전술한 보조프레임(112)의 길이는 대략 메인프레임(111)의 길이에 2/3 정도로 설계하는 것이 좋다. 그러나, 보조프레임(112)의 길이가 지나치게 짧을 경우, 테이블을 약간만 들어도 연결부재(112b)가 통로(112a)에서 빠져 테이블이 주저 앉을 수 있기 때문이다.

[0035] 도 5a를 참조하면, 도 5a는 도 3의 A-A선 단면도로, 도 4에 도시된 X자형 다리(120)와 상판(110)과의 결합상태를 보여준다.

[0036] X자형 다리(120)는 각각 한 쌍으로 이루어진 내측 및 외측 다리(122)(121)로 구성되어 있는데, 상기 내측 다리(122)는 양 외측 다리(121)사이에 피벗(123)에 의해 피벗되도록 결합되어 있다.

[0037] 도면에서 참조부호 121a와 122a는 각각 한 쌍으로 이루어진 내측 및 외측 다리(122)(121)를 서로 연결시키기 위한 고정부재로, 고정부재(121a)(122a)는 양 외측 다리(121)가 양 메인프레임(111)의 내측 면에 접해진 생태가 유지되고 한 쌍의 양 외측다리가 함께 연동하도록 길이를 조절하여 채용된다.

[0038] 전술한 고정부재(122a)는 양 내측 다리(122)사이에 결합하되 보조프레임(112)의 외측면에 양 내측 다리(122) 안쪽에 접해지도록 고정부재(122a)의 길이를 조절함으로써 양 내측 다리(122)가 동시에 연동할 수 있다.

[0039] 전술한 한 쌍의 내측 다리(122)는 그 상측에 전술한 통로(112a)속으로 출입할 수 있는 연결부재(112b)가 결합되어 있는데, 상기 연결부재(112b)의 길이는 양 보조프레임(112)의 외측면간의 길이와 같게 채용될 수 있다.

[0040] 전술한 양 외측 다리(121)는 그 상단부가 양 메인프레임(111)의 내측면에 피벗되도록 결합되어 있고, 양 보조프레임(112)의 외측면의 거리와 같은 길이를 지닌 고정부재(121a)(도 4 참조)로 연결되어 있어 양 외측 다리(121)는 동시에 움직일 수 있다.

[0041] 또한 상기한 내외측 다리(122)(121)의 각 상단은 둥글게 모따기하여 피벗을 중심으로 외측 다리가 회동될 때 내외측 다리(122)(121)가 걸림없이 원활하게 회동될 수 있다.

[0042] 전술한 바와 같이 이루어진 본 발명의 테이블 다리 절첩 예를 첨부된 도면을 참조하여 설명한다.

[0043] 도 7a 내지 도 7c를 참조하면, 도 7a 내지 도 7c는 본 발명에 따른 테이블 다리의 절첩 과정을 예시한 테이블의 측단면도로, 상판(110)을 화살표 방향으로 들어 올리면, 보조프레임(112)의 통로(112a)속에 삽입된 연결부재(112b)가 통로밖으로 빠져 나오게 된다.

[0044] 통로(112a)에서 분리된 내측 다리(122)를 도 7b에 도시된 바와 같이 피벗(123)을 중심으로 회전시켜 양 다리(121)(122)의 축선이 나란해지도록 포갠 뒤, 포갠 X자형 다리(120)를 피벗(111a)를 중심으로 도 7c의 화살표 방향으로 회전시키면, X자형 다리(120) 전체가 상판(110)의 저면에 밀착됨과 동시에 메인프레임(111)과 보조프레임(112)사이로 삽입되어 고정된다.

[0045] 다시 말해서, 메인프레임(111)과 보조프레임(112)사이로 X자형 다리(120)가 삽입되면 메인프레임(111)의 높이(H)와 동일한 X자형 다리(120)의 높이와 같으므로테이블(100)의 높이를 가장 작게 절첩할 수 있으면서 X자형 다리(120)의 양 외측면이 메인 및 보조프레임(111)(112)사이에 끼여 상판에 고정되는 것이다.

[0046] 본 발명의 테이블의 설치에 따른 사용예를 설명한다.

[0047] 테이블(100)의 설치는 전술한 테이블 절첩의 역순에 의해 도 3과 내지 도 5a에 도시된 바와 같이 테이블(100)의 다리가 설치된다.

[0048] 테이블(100)이 설치된 상태에서는 X자형 다리(120) 중 외측 다리(121)의 외측면이 양 메인프레임(111)의 내면에

접해지게 되고, 양 보조프레임(112)의 외측면에 내측 다리(122)의 안쪽면이 각각 접해져 지지하므로 양 다리(121)(122)를 보다 견고하게 지지할 수 있다.

[0049] 아울러, 도 5b와 도 6c에 도시된 바와 같이 통로에 복수의 걸림턱(112c)을 지닌 보조프레임(112)을 채용할 경우, 지면이 울퉁불퉁한 곳에서도 높이조절 부재를 사용하지 않고 X자형 다리만으로 테이블의 상판(110)을 수평하게 그리고 자세가 안정되게 지지할 수 있다.

[0050] 전술한 본 발명과 배경기술을 대비하여 살펴보면, 본 발명은 다음과 같은 차이점이 있다.

[0051] (1)배경기술의 탁자는 가이드 봉이 가이드내에서 가이드를 따라 유동되므로 횡방향 압력에 취약한 반면에 본 발명의 외측 다리(121)의 외측면이 양 메인프레임(111)의 내면에, 그리고 내측 다리(122)의 내측면이 양 보조프레임(112)의 외측면에 각각 접해져 지지하므로 다리와 상판을 안정적이고 견고하게 지지할 수 있다.

[0052] (2)본 발명은 통로(112a)에 마련된 복수의 걸림턱(122c) 중 어느 하나에 연결부재(112b)를 선택적으로 결합함으로써 지면이 평탄한 곳은 물론 지면이 울퉁불퉁한 곳에서도 테이블(100)을 수평하게 설치할 수 있으나 이러한 작용은 배경기술에서는 찾아 볼 수 없다.

[0053] (3)본 발명은 X자형 다리(120)를 접었을 때, X자형 다리(120)의 측면이 양 프레임(111)(112)에 의해 움직이지 않도록 고정되지만 배경기술에서는 찾아 볼 수 없다.

[0054] (4)본 발명의 테이블 다리는 접었을 때 내/외측 다리의 양 축선이 나란하게 포개져 내/외측 다리의 두께가 단일화되므로 테이블의 두께를 가장 효과적으로 축소할 수 있다.

[0055] 전술한 바와 같이 본 발명은 배경기술의 제반 문제점을 극복하고 보다 개선된 절첩식 휴대용 테이블을 구현할 수 있다.

[0056] 이상에서는 본 발명의 바람직한 실시예를 통해 본 발명을 상세히 설명하였으나 본 발명이 속한 기술분야에 통상의 지식을 가진 자라면 본 발명을 통해 다양한 응용예나 변경예를 실시할 수 있을 것이나, 이러한 응용예나 변경예는 이하의 특허청구범위에서 정의된 특허청구범위와 본 발명자가 의도하는 진정한 의미의 기술적 사상에 포함된다는 것을 미리 밝혀둔다.

부호의 설명

[0057] 100: 테이블 110: 상판

111: 메인프레임 111a: 피벗

112: 보조프레임 112a: 통로

112b: 연결부재 112c: 걸림턱

120: X자형 다리 121: 외측 다리

122: 내측 다리 123: 피벗

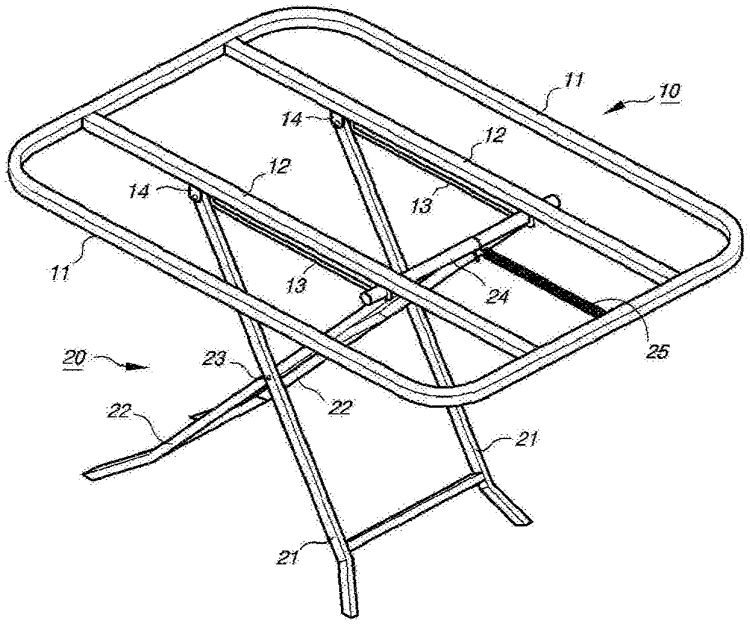
121a: 고정부재 122a: 고정부재

H: 메인프레임의 높이

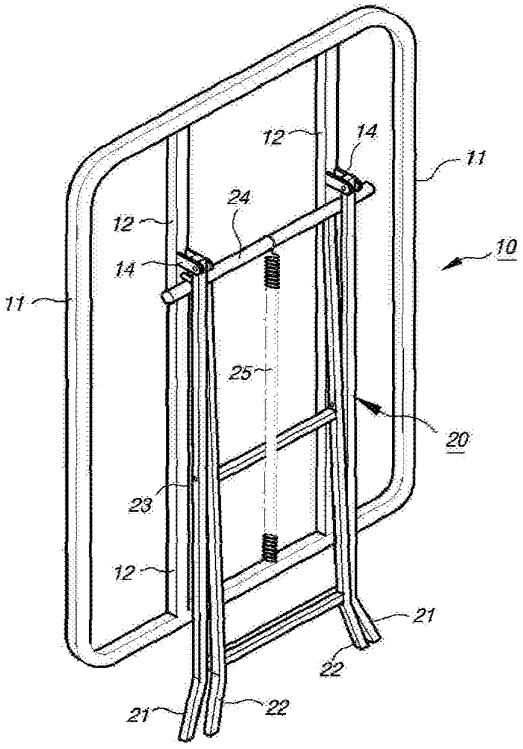
T: 메인프레임과 보조프레임의 간격

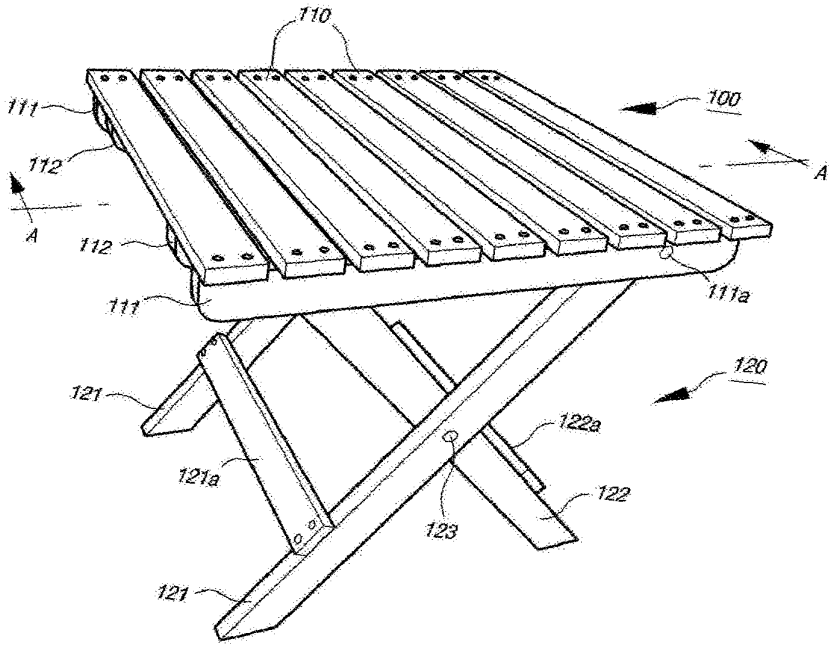
도면

도면1

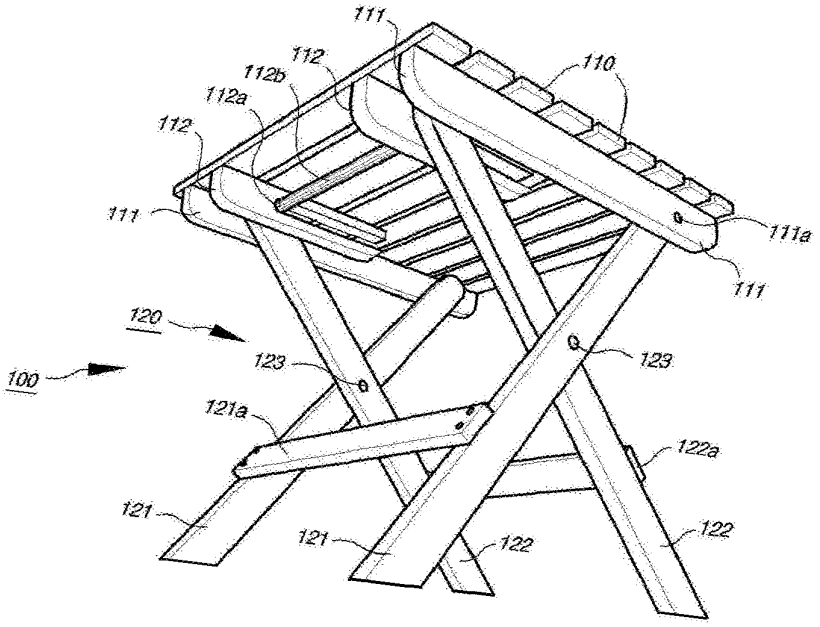

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도면2

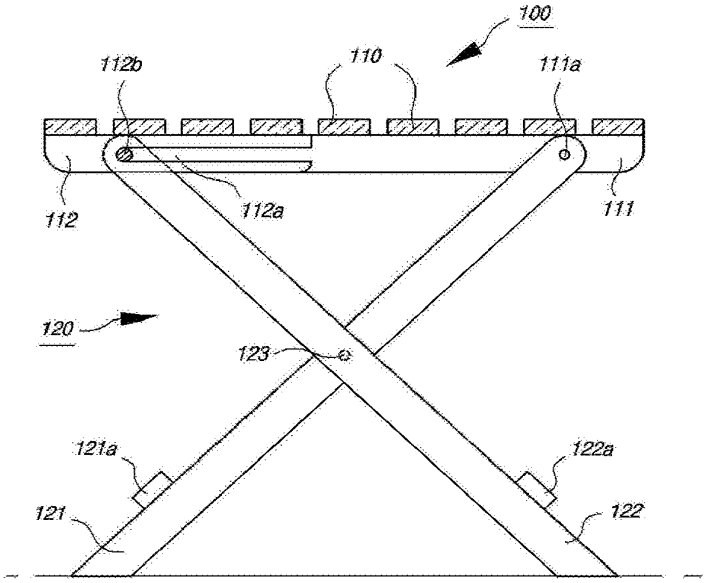

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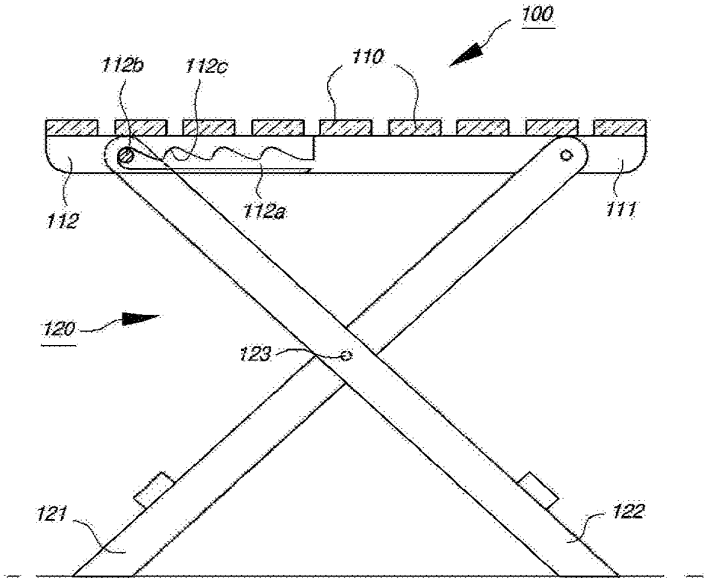
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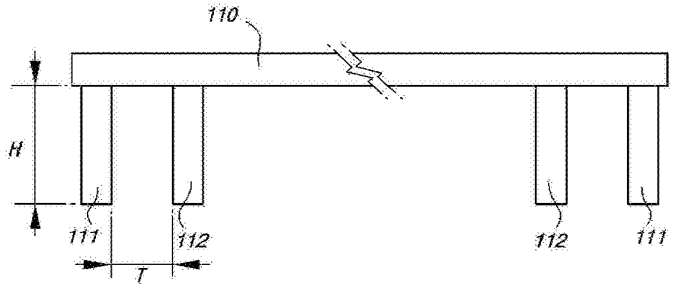
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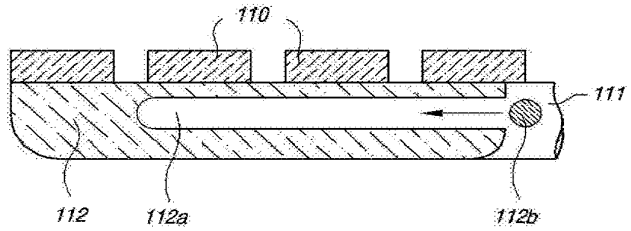
도면5b


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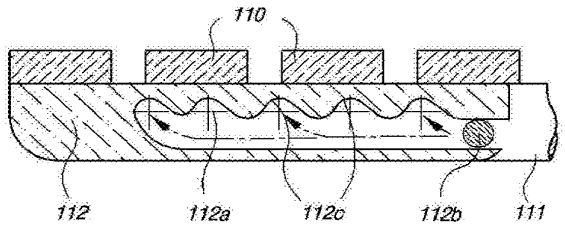
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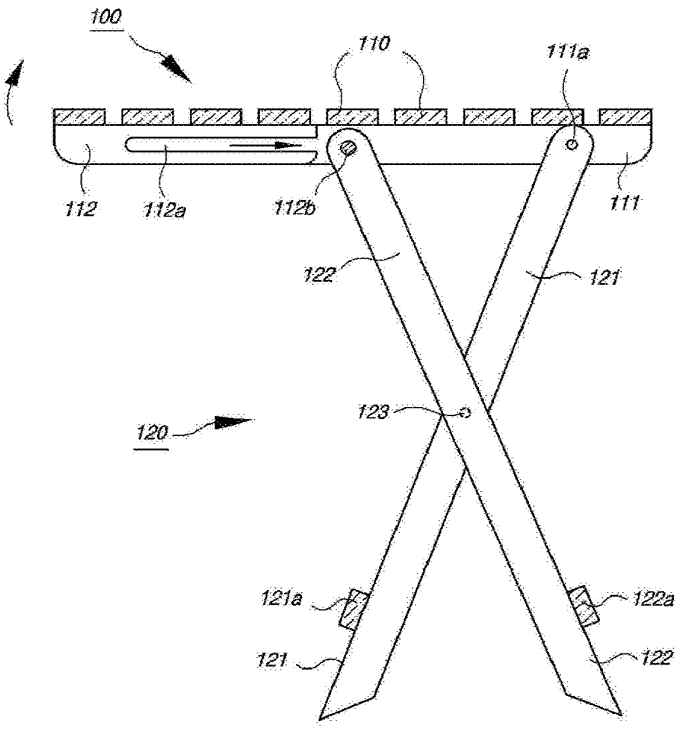
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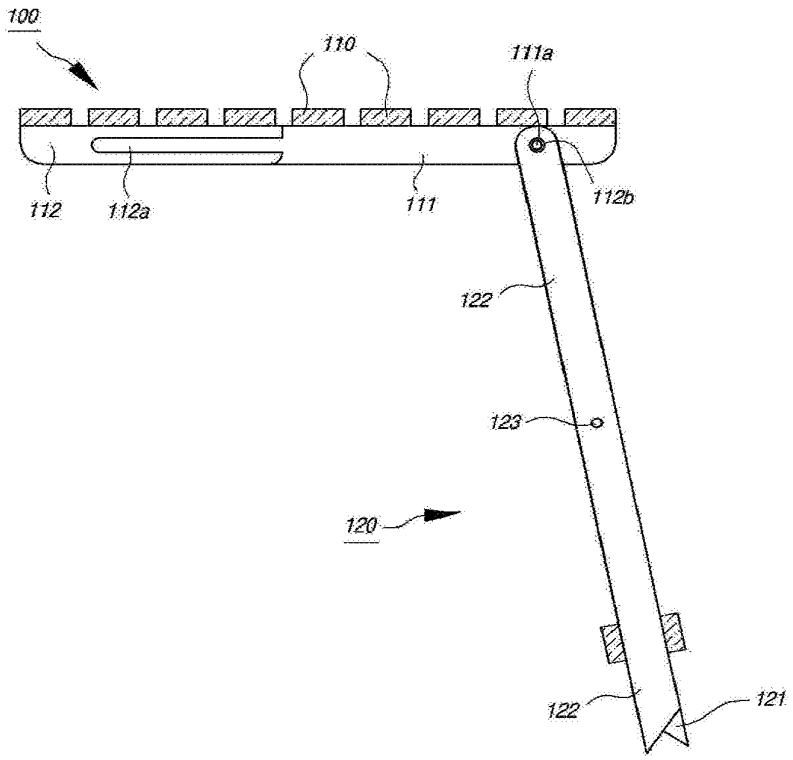
도면6c



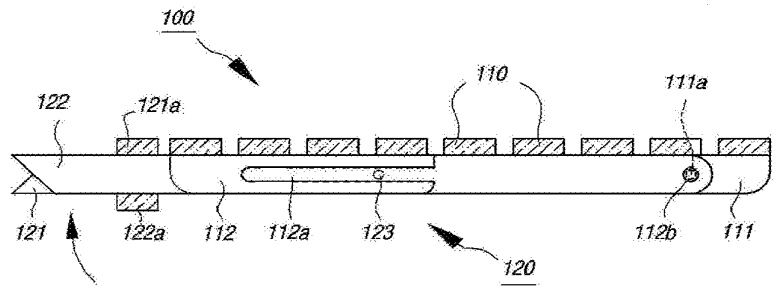
도면7a


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도면7b


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도면7c



【심사관 직권보정사항】

【직권보정 1】

【보정항목】 청구범위

【보정세부항목】 청구항 1

【변경전】

걸림턱를

【변경후】

걸림턱을

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
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Name	Nathan Poniatowski		
Title			

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Patents CN 2781893

Controllable elevator

Abstract

The utility model relates to a controllable elevator belonging to the technical field of beds, tables or floors. The back of a table top is connected with two upper slide ways mutually paralleled. An upper fixed rotating shaft is arranged between the two upper slide ways. Both ends of the upper fixed rotating shaft are respectively connected with the two upper slide ways in a rotating mode. An upper sliding shaft is arranged between the two upper slide ways in a sliding mode. Both ends of the upper fixed rotating shaft are respectively hinged with one connecting plate. Both ends of the upper sliding shaft are respectively hinged with the other connecting plate. The middle parts of the two connecting plates are mutually hinged with each other. The lower ends of the two connecting plates are connected by a lower sliding shaft. Both ends of the lower sliding shafts are respectively arranged in a couple of mutually parallel lower slide ways in a sliding mode. The lower ends of the other two connecting rods are connected to the lower slide way in a rotating mode. A lower fixed shaft is hinged between the lower ends of the two connecting rods. A locking gas spring is arranged between the upper slide way and the lower slide way. The height of the table top can be adjusted at will by the locking gas spring. The utility model can improve the existing single sleeping function of a sleeping berth and increase comfort for long-distance travel.

CN2781893Y

China

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Other languages: Chinese

Inventor: [redacted]

Worldwide applications

2005 CN

Application CN 200520068394 events

2005-01-19 Application filed by [redacted]

2005-01-19 Priority to CN 200520068394

2006-05-24 Application granted

2006-05-24 Publication of CN2781893Y

2015-01-19 Anticipated expiration

Status Expired - Fee Related

Info: Cited by (7), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Claims (6)

Hide Dependent

1, the controllable type lifting platform comprises table top, it is characterized in that the back of table top connects two upper hopper chutes that are parallel to each other, and fixed axis on is being set between two upper hopper chutes, and two ends of fixed axis are connected respectively on two upper hopper chutes turnably on this; Movable axis on one of also slideable layout between two upper hopper chutes; Link a connecting plate one respectively at the two ends of last fixed axis, at the hinged connecting plate two of the two ends of last sliding axle difference, two connecting plates, one, two middle parts near same upper hopper chute are hinged, the lower end of two connecting plates one is by movable axis connection down, the two ends of following movable axis are slideable respectively to be arranged in a pair of gliding groove that is parallel to each other, the lower end of two connecting rods two is connected on the gliding groove turnably, is hinged down fixed axis between the lower end of two connecting rods two; Be provided with the lockable air spring between upper and lower chute, the two ends of described lockable air spring are hinged and connected to respectively on the upper and lower chute.

2, controllable type lifting platform according to claim 1 is characterized in that movable axis is connected on the upper hopper chute by roller.

3, controllable type lifting platform according to claim 1 is characterized in that movable axis is connected on the gliding groove by roller down.

4, controllable type lifting platform according to claim 1 is characterized in that connecting by movable axis between the upper plate one, two.

5, according to claim 1 or 2 or 3 or 4 described controllable type lifting platforms, it is characterized in that on two gliding grooves fixing feet being set respectively.

6, controllable type lifting platform according to claim 1 is characterized in that the table top back is provided with the supplemental support pin.

Description

The controllable type lifting platform

Technical field

The utility model relates to bed, table or ground plate technique, the technical pattern that particularly can regulate its height.

Background technology

Jubilee wagen driver's cabin and rear are furnished with the lobby, though the space is bigger in the existing lobby, have only a highly fixing bed, and bed surface is fixed on the car body by the pin of its below, only has unique function of bedding.Truck man is because the body and mind of driving over a long distance is all very tired out, and this lobby can't provide comfortable has a meal, have tea, the leisure condition, very inconvenience concerning the long-distance driver of long-term race, even also influential safe driving.

The utility model content

The utility model purpose is to the driver provides a kind of controllable type Lifting platform, by regulating the table top height, can change the function of use of table top, for the multiple demand of driver is provided convenience.

The utility model comprises table top, and characteristics are that the back of table top connects two upper hopper chutes that are parallel to each other, and fixed axis on is being set between two upper hopper chutes, and two ends of fixed axis are connected respectively on two upper hopper chutes turnably on this; Movable axis on one of also slideable layout between two upper hopper chutes; Link a connecting plate one respectively at the two ends of last fixed axis, at the hinged connecting plate two of the two ends of last sliding axle difference, two connecting plates, one, two middle parts near same upper hopper chute are hinged, the lower end of two connecting plates one is by movable axis connection down, the two ends of following movable axis are slideable respectively to be arranged in a pair of gliding groove that is parallel to each other, the lower end of two connecting rods two is connected on the gliding groove turnably, is hinged down fixed axis between the lower end of two connecting rods two; Be provided with the lockable air spring between upper and lower chute, the two ends of described lockable air spring are hinged and connected to respectively on the upper and lower chute.

The utility model is by the lockable air spring, can regulate table surface height as required arbitrarily, apply on the sleeping berth of medium-sized, large truck, can improve the function that consistent sleeping berth can only be slept, this product can make the appliance crew who drives in the way can sleep, can sit, can have a meal, eat tea etc., increased the long-distance comfortableness of taking greatly, made these commodity of truck have more hommization.The utility model also can apply to various chesses and understand club, and Japanese tatami.

Regulate for convenient, last movable axis is connected on the upper hopper chute by roller; Following movable axis is connected on the gliding groove by roller.

For increasing the stability of product, connect by movable axis between the upper plate one, two of the present utility model.

For increasing product and the stability that ground is installed, on two gliding grooves fixing feet is set respectively.

Improper for preventing from, make table top low excessively, influence or damage the essential parts in table top back by pressure, the table top back is provided with the supplemental support pin.

Description of drawings

Fig. 1 is the utility model structural representation.

Fig. 2 be among Fig. 1 A-A to cut-away view.

Specific embodiment

As shown in Figure 1, the back fixation of table top 1 connects two upper hopper chutes 2 that are parallel to each other, and fixed axis 3 on is being set between two upper hopper chutes 2, and the two ends of last fixed axis 3 are connected respectively on two upper hopper chutes 2 turnably.Movable axis 4 on one of slideable layout between two upper hopper chutes 2, last movable axis 4 two ends connect a roller 5 respectively, and roller 5 is engaged in the track of upper hopper chute 2.

As shown in Figure 1, 2, link a connecting plate 1 respectively at the two ends of last fixed axis 3, at the hinged connecting plate 27 of the two ends of last movable axis 4 difference, two connecting plates, one 6,27 middle parts of close same upper hopper chute intersect and are set in respectively on the movable axis 8, the lower end of two connecting plates 1 is by movable axis 9 connections down, the two ends of following movable axis 9 are slideable respectively to be arranged in a pair of gliding groove that is parallel to each other 10, the two ends of following movable axis 9 connect a roller 11 respectively, are engaged in by roller 11 in the track of gliding groove 10.

The lower end of two connecting rods 27 is connected on the gliding groove 10 turnably, and the lower end of two connecting rods 27 is hinged and connected to down the two ends of fixed axis 12 respectively.

Be provided with lockable air spring 13 between upper and lower chute 2,10, the upper/lower terminal of lockable air spring 13 is hinged and connected to respectively on the upper and lower chute 2,10.

Be arranged with supplemental support pin 15 at the back of table top 1.

On two gliding grooves 10, weld a pair of fixing feet 14 respectively, to increase product and the stability that ground is installed.

Supporting special switch is connected with the steel wire button, and rigidity press button 16 is installed to place, desktop limit, makes the gas pressure of the optimum efficiency of oscillation and supporting desktop to air spring for making same table, and fulcrum is installed, and designs rational manufacturing data.

When using this,, just gently carry up or down, press with have gentle hands and can realize its elevating function as long as press the desktop switch.

Cited By (7)

Publication number	Priority date	Publication date	Assignee	Title
CN101934756A *	2010-07-14	2011-01-05	重庆迪马工业有限责任公司	Scissor type motor-caravan lifting bed
CN102715728A *	2012-07-05	2012-10-10	陈剑锋	Table with lifting table top
CN103481221A *	2013-09-27	2014-01-01	苏州凯歌机械科技有限公司	Novel multipurpose lifting and positioning worktable
CN103754151A *	2014-01-02	2014-04-30	常熟华东汽车有限公司	Vehicle compartment top space extension device
CN105124920A *	2015-09-18	2015-12-09	宁波乐歌机械科技股份有限公司	Lifting workbench
CN106671039A *	2016-12-26	2017-05-17	力帆实业(集团)股份有限公司	Motorcycle supporting frame
CN112026611A *	2020-08-31	2020-12-04	一汽解放汽车有限公司	Sleeping berth device and using method thereof

Family To Family Citations

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
CN2781893Y	2006-05-24	Controllable elevator
CN202136513U	2012-02-08	Medical nursing bed
CN103796556B	2017-05-17	Three-in-one sofa bed
CN103350654B	2016-04-13	A kind of height-adjustable bearing device
CN105640080B	2018-03-30	A kind of dormitory shaking type lifting bed
US10820711B2	2020-11-03	Extended-range versatilely-configurable user-assembled adjustable, and high-low adjustable, beds
CN201213574Y	2009-04-01	Notebook computer desk
CN202490121U	2012-10-17	Triple-folding electric lifting sickbed
CN209827310U	2019-12-24	Sliding type nursing bed
CN204446386U	2015-07-08	A kind of multifunctional overturn bed
CN2287472Y	1998-08-12	Automatic hospital bed
CN207767803U	2018-08-28	Multifunctional height adjusting table
CN2845584Y	2006-12-13	Multifunctional bed
CN2432105Y	2001-05-30	Dual-purpose seat for sitting and sleeping for passenger carriage
CN206491534U	2017-09-15	Intelligent elevated conversion furniture
CN201046198Y	2008-04-16	Multifunction sickbed
CN201238739Y	2009-05-20	Multifunctional table
CN209629191U	2019-11-15	Bedstead structure
CN208129837U	2018-11-23	A kind of bed automatic hoisting mechanism
CN2686583Y	2005-03-23	Multifunctional convalescent bed
CN2779993Y	2006-05-17	Multifunction folding bed
CN107444692A	2017-12-08	A kind of blue or green crisp Lee's automatic loading mechanism for medical
CN208864671U	2019-05-17	A kind of rise-and-fall hospital bed
CN2416813Y	2001-01-31	Folding bed
CN208755288U	2019-04-19	Can sitting be used alternatingly hydraulic foldable lifting computer desk

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
CN 200520068394	2005-01-19	2005-01-19	Controllable elevator

Applications Claiming Priority (1)

Application	Filing date	Title
CN 200520068394	2005-01-19	Controllable elevator

Legal Events

Date	Code	Title	Description

2006-05-24	C14	Grant of patent or utility model
2006-05-24	GR01	Patent grant
2009-04-15	C19	Lapse of patent right due to non-payment of the annual fee
2009-04-15	CF01	Termination of patent right due to non-payment of annual fee

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
supplemental		claims,description	3	0.000

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[19] 中华人民共和国国家知识产权局

[51] Int. Cl.
A47B 9/16 (2006.01)
B60P 3/39 (2006.01)

[12] 实用新型专利说明书

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代理人 江 平

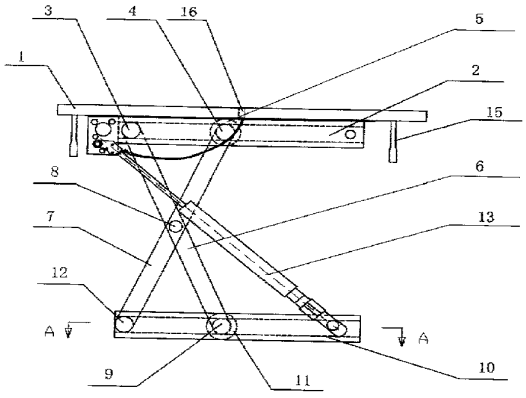
权利要求书 1 页 说明书 3 页 附图 1 页

[54] 实用新型名称

可控式升降台

[57] 摘要

可控式升降台，涉及床、桌或地板技术，台面的背部连接相互平行的两根上滑槽，在两根上滑槽之间设置一根上固定转轴，该上固定轴的两端分别可转动式连接在两根上滑槽上；在两根上滑槽之间还可滑动式布置一根上活动轴；在上固定轴的两端分别绞接一根连板，在上滑动轴的两端分别铰接另一根连板，两只连板中部相互铰接，两只连板的下端通过下活动轴连接，下活动轴的两端分别可滑动式布置在一对相互平行的下滑槽内，另两只连杆的下端可转动式连接在下滑槽上，两只连杆的下端之间铰连接下固定轴；在上、下滑槽之间设有可锁定气弹簧，通过可锁定气弹簧，任意调节台面高度，可改善一贯的卧铺只能睡的功能，大大增加了长途乘坐的舒适性。



1、可控式升降台，包括台面，其特征在于台面的背部连接相互平行的两根上滑槽，在两根上滑槽之间设置一根上固定轴，该上固定轴的两端分别可转动式连接在两根上滑槽上；在两根上滑槽之间还可滑动式布置一根上活动轴；在上固定轴的两端分别绞接一根连板一，在上滑动轴的两端分别铰接一根连板二，靠近同一根上滑槽的两只连板一、二中部相互铰接，两只连板一的下端通过下活动轴连接，下活动轴的两端分别可滑动式布置在一对相互平行的下滑槽内，两只连杆二的下端可转动式连接在下滑槽上，两只连杆二的下端之间铰连接下固定轴；在上、下滑槽之间设有可锁定气弹簧，所述可锁定气弹簧的两端分别铰连接在上、下滑槽上。

2、根据权利要求 1 所述的可控式升降台，其特征在于上活动轴通过滚轮连接在上滑槽上。

3、根据权利要求 1 所述的可控式升降台，其特征在于下活动轴通过滚轮连接在下滑槽上。

4、根据权利要求 1 所述的可控式升降台，其特征在于上连板一、二之间通过活动中轴连接。

5、根据权利要求 1 或 2 或 3 或 4 所述的可控式升降台，其特征在于两根下滑槽上分别设置固定脚。

6、根据权利要求 1 所述的可控式升降台，其特征在于台面背部设有辅助支撑脚。

可控式升降台

技术领域

本实用新型涉及床、桌或地板技术，特别是可调节其高度的技术结构。

背景技术

小型货车驾驶室与后方配有休息室，现有的休息室里虽然空间较大，但只有一张高度固定的床，床面被其下方的脚固定在车体上，只具有卧具的唯一功能。货车司机由于长途驾驶身心都很疲惫，这种休息室无法提供舒适的吃饭、喝茶、休闲条件，对长期跑长途的驾驶员来说极为不便，甚至还有影响安全驾驶。

实用新型内容

本实用新型目的在于为驾驶员提供一种可控式升降台面，通过调节台面高低，可改变台面的使用功能，为驾驶员多种需求提供方便。

本实用新型包括台面，特点是台面的背部连接相互平行的两根上滑槽，在两根上滑槽之间设置一根上固定轴，该上固定轴的两端分别可转动式连接在两根上滑槽上；在两根上滑槽之间还可滑动式布置一根上活动轴；在上固定轴的两端分别绞接一根连板一，在上滑动轴的两端分别铰接一根连板二，靠近同一根上滑槽的两只连板一、二中部相互铰接，两只连板一的下端通过下活动轴连接，下活动轴的两端分别可滑动式布置在一对相互平行的下滑槽内，两只连杆二的下端可转动式连接在下滑槽上，两只连杆二的下端之间铰连接下固定轴；在上、下滑槽之间设有可锁定气弹簧，所述

可锁定气弹簧的两端分别铰连接在上、下滑槽上。

本实用新型通过可锁定气弹簧，可根据需要任意调节台面高度，运用到中型、大型卡车的卧铺上，可改善一贯的卧铺只能睡的功能，该产品可使驾乘途中的随车人员可睡、可坐、可吃饭、吃茶等，大大增加了长途乘坐的舒适性，使卡车这个商品更具人性化。本实用新型还可运用到各种棋会俱乐部，以及日式的榻榻米。

为方便调节，上活动轴通过滚轮连接在上滑槽上；下活动轴通过滚轮连接在下滑槽上。

为增加产品的稳定性，本实用新型的上连板一、二之间通过活动中轴连接。

为增加产品与安装地面的稳定性，两根下滑槽上分别设置固定脚。

为防止调控不当，使台面过低，影响或压坏台面背部必需部件，台面背部设有辅助支撑脚。

附图说明

图 1 为本实用新型结构示意图。

图 2 为图 1 中 A-A 向剖示图。

具体实施例

如图 1 所示，台面 1 的背部固定连接相互平行的两根上滑槽 2，在两根上滑槽 2 之间设置一根上固定轴 3，上固定轴 3 的两端分别可转动式连接在两根上滑槽 2 上。在两根上滑槽 2 之间可滑动式布置一根上活动轴 4，上活动轴 4 两端分别连接一只滚轮 5，滚轮 5 配合在上滑槽 2 的轨道内。

如图 1、2 所示，在上固定轴 3 的两端分别绞接一根连板一 6，在上活动轴 4 的两端分别铰接一根连板二 7，靠近同一根上滑槽的两只连板一 6、

二 7 中部交叉并分别穿置在活动中轴 8 上，两只连板一 6 的下端通过下活动轴 9 连接，下活动轴 9 的两端分别可滑动式布置在一对相互平行的下滑槽 10 内，下活动轴 9 的两端分别连接一只滚轮 11，通过滚轮 11 配合在下滑槽 10 的轨道内。

两只连杆二 7 的下端可转动式连接在下滑槽 10 上，两只连杆二 7 的下端分别铰连接在下固定轴 12 的两端。

在上、下滑槽 2、10 之间设有可锁定气弹簧 13，可锁定气弹簧 13 的上、下两端分别铰连接在上、下滑槽 2、10 上。

在台面 1 的背部对称设有辅助支撑脚 15。

在两根下滑槽 10 上分别焊接一对固定脚 14，以增加产品与安装地面的稳定性。

配套专门的开关与钢线按钮连接，将钢性按钮开关 16 安装到桌面边处，为使升降桌作上下升降及支撑桌面的最佳效果对空气弹簧的气体压力，安装支点，设计出合理的制造数据。

使用该桌时，只要按动桌面开关，用手轻轻向上或向下提、压就可以实现其升降功能。

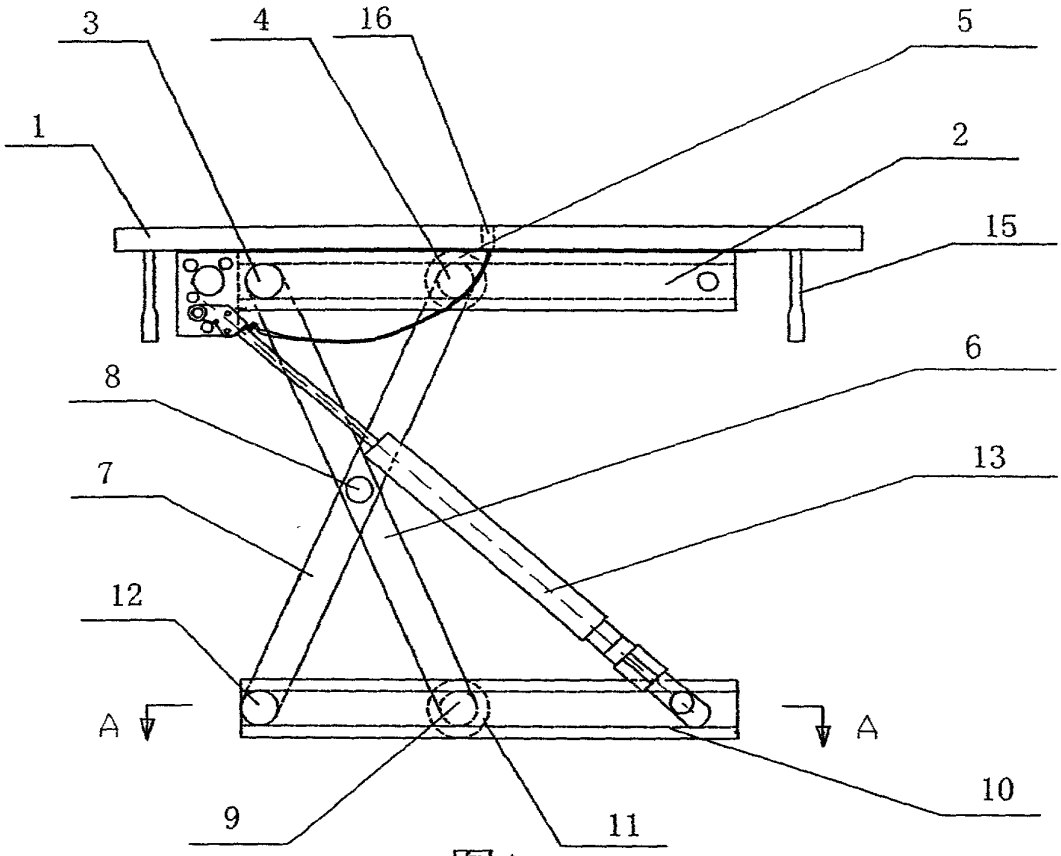


图1

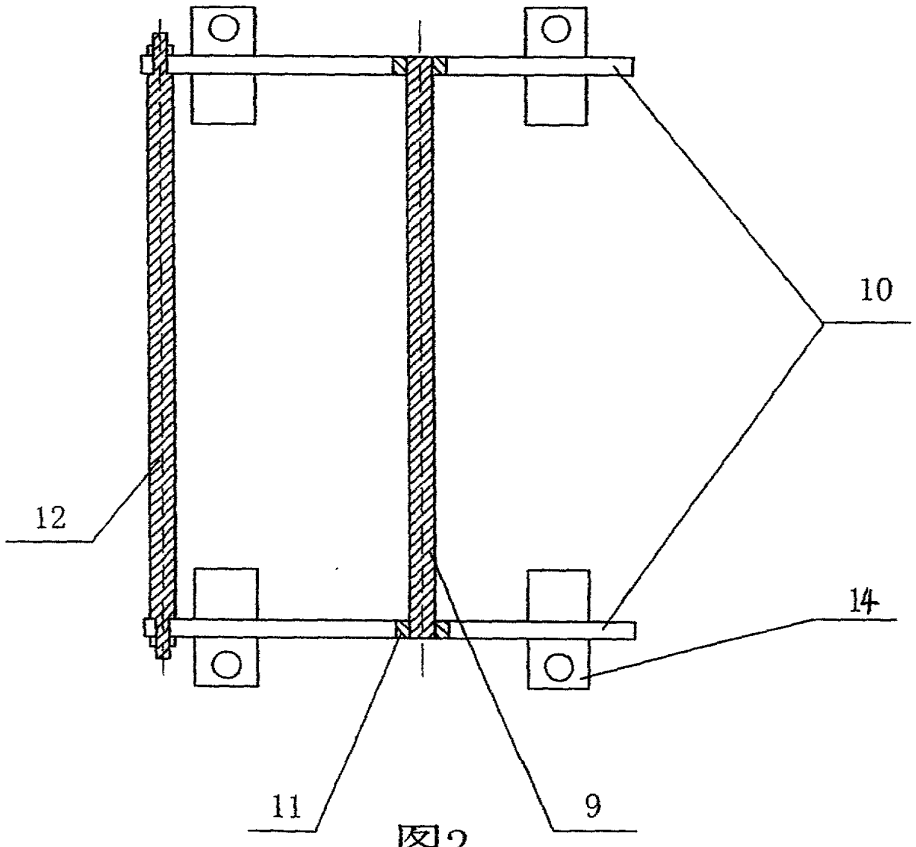


图2

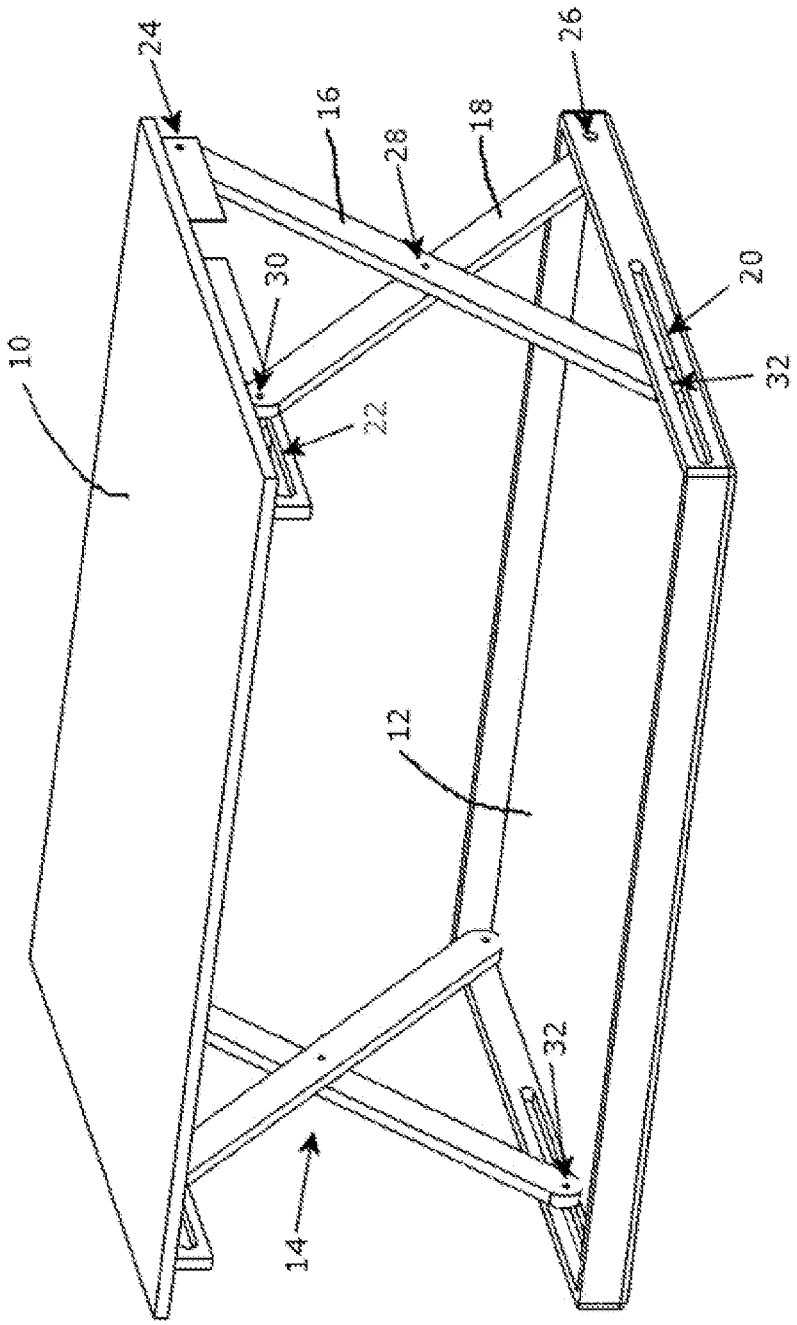


FIG. 1

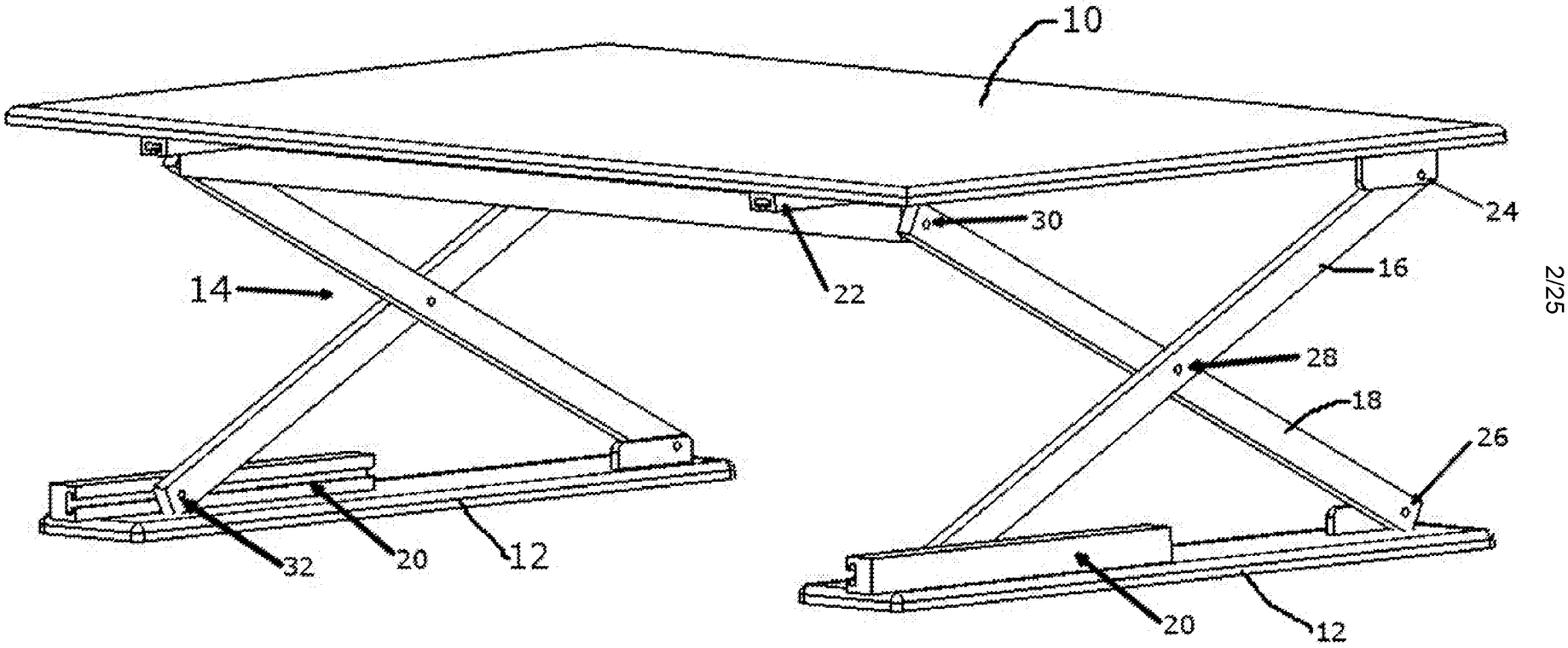


FIG. 1B

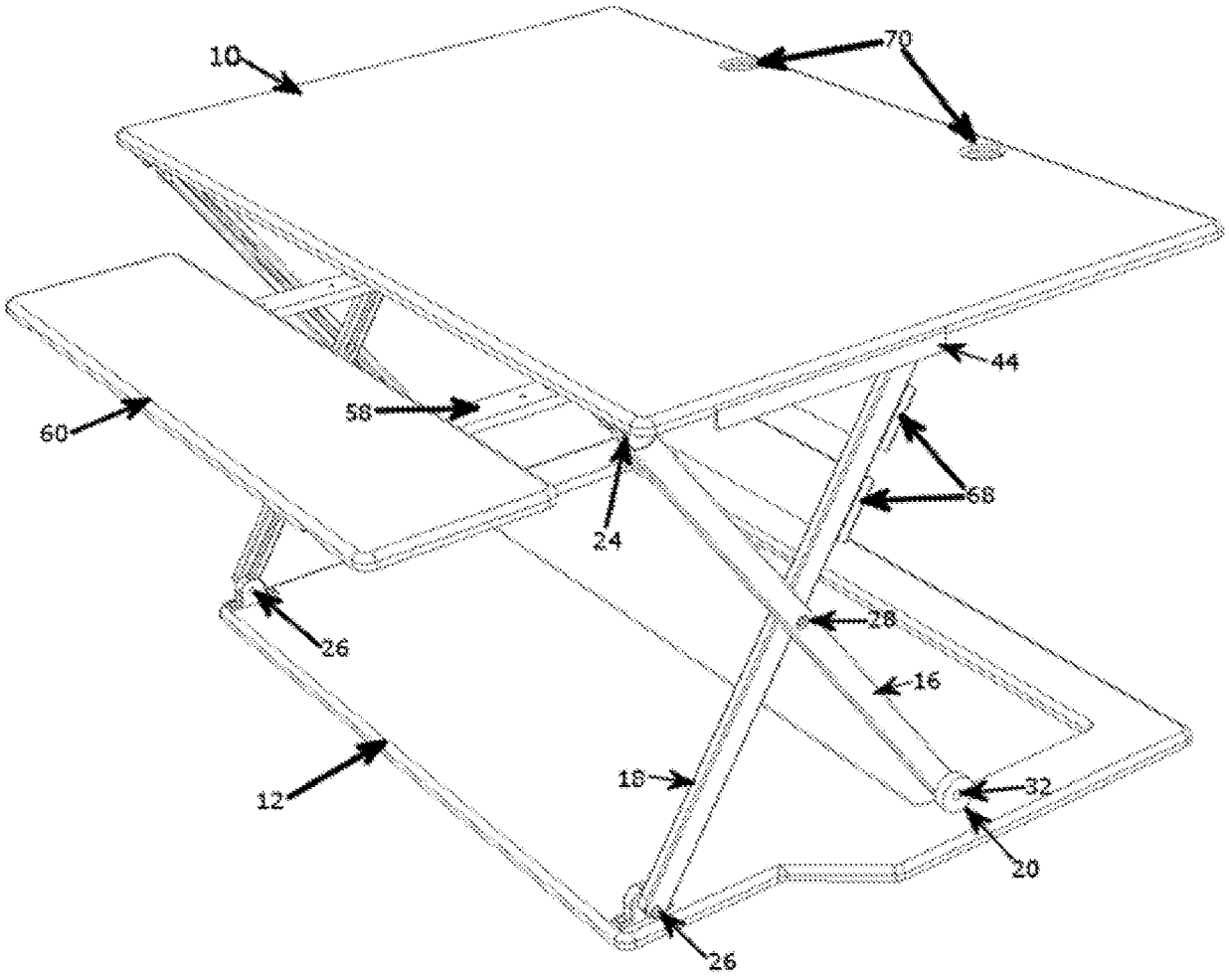


FIG. 1C

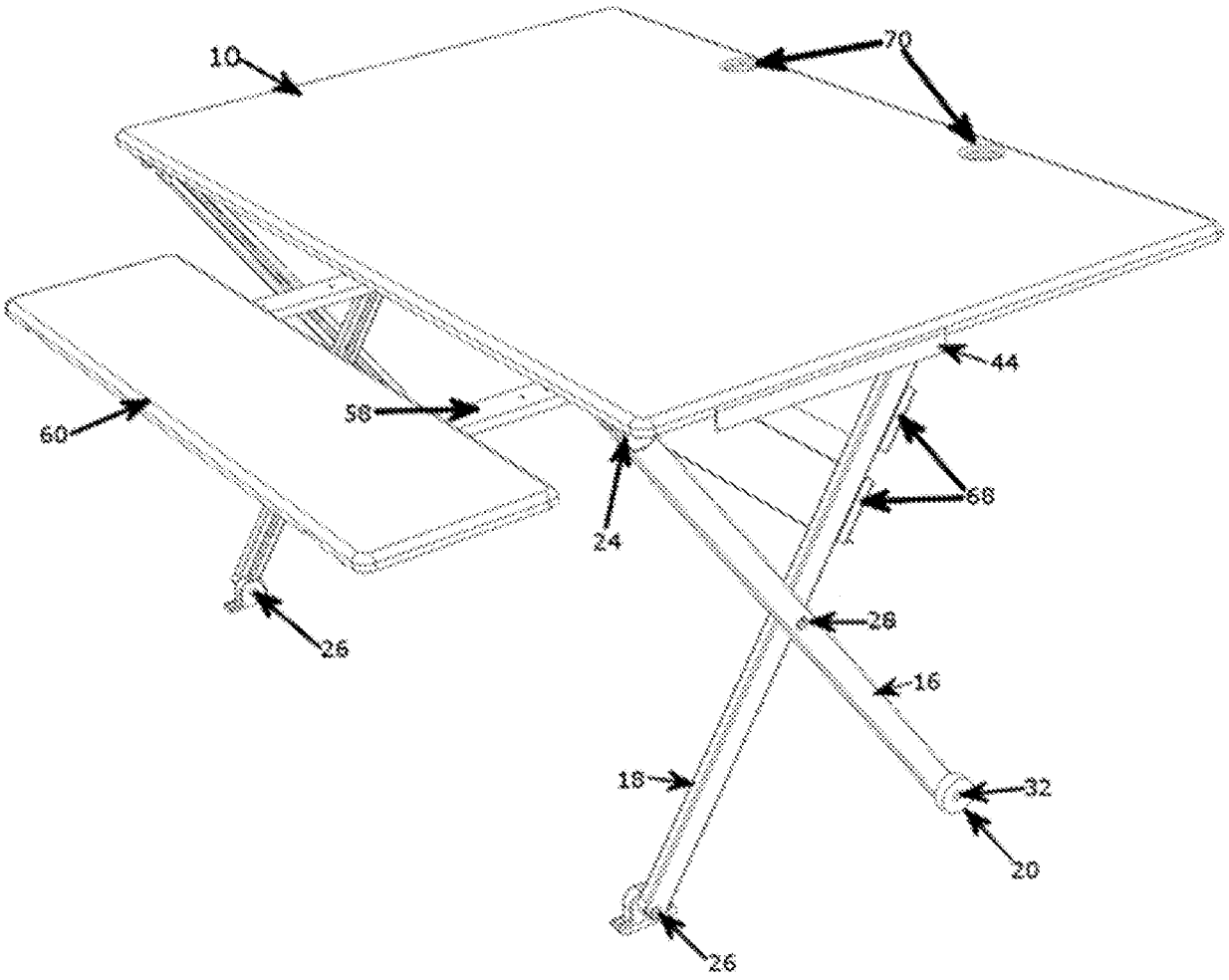


FIG. 1D

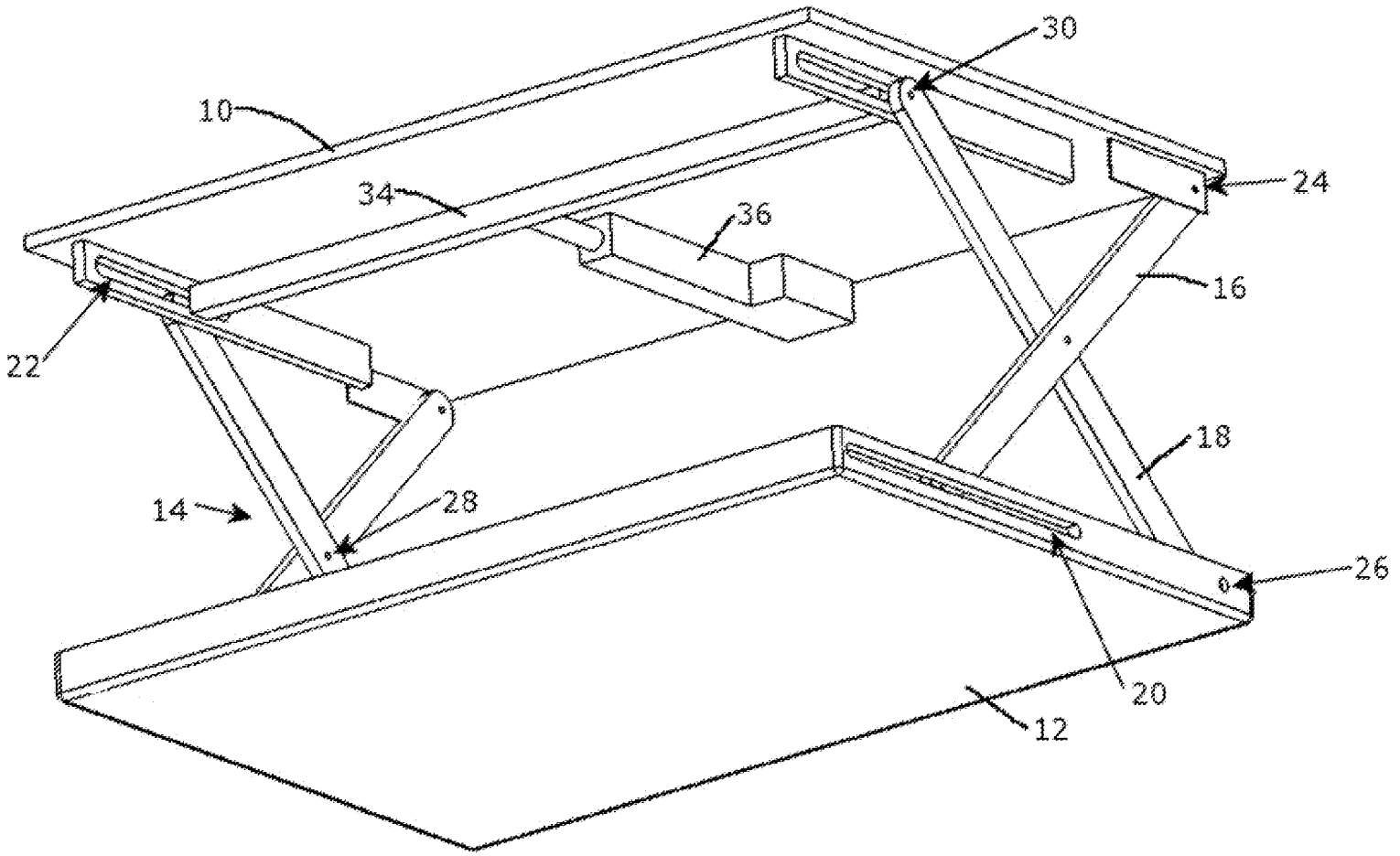


FIG. 2

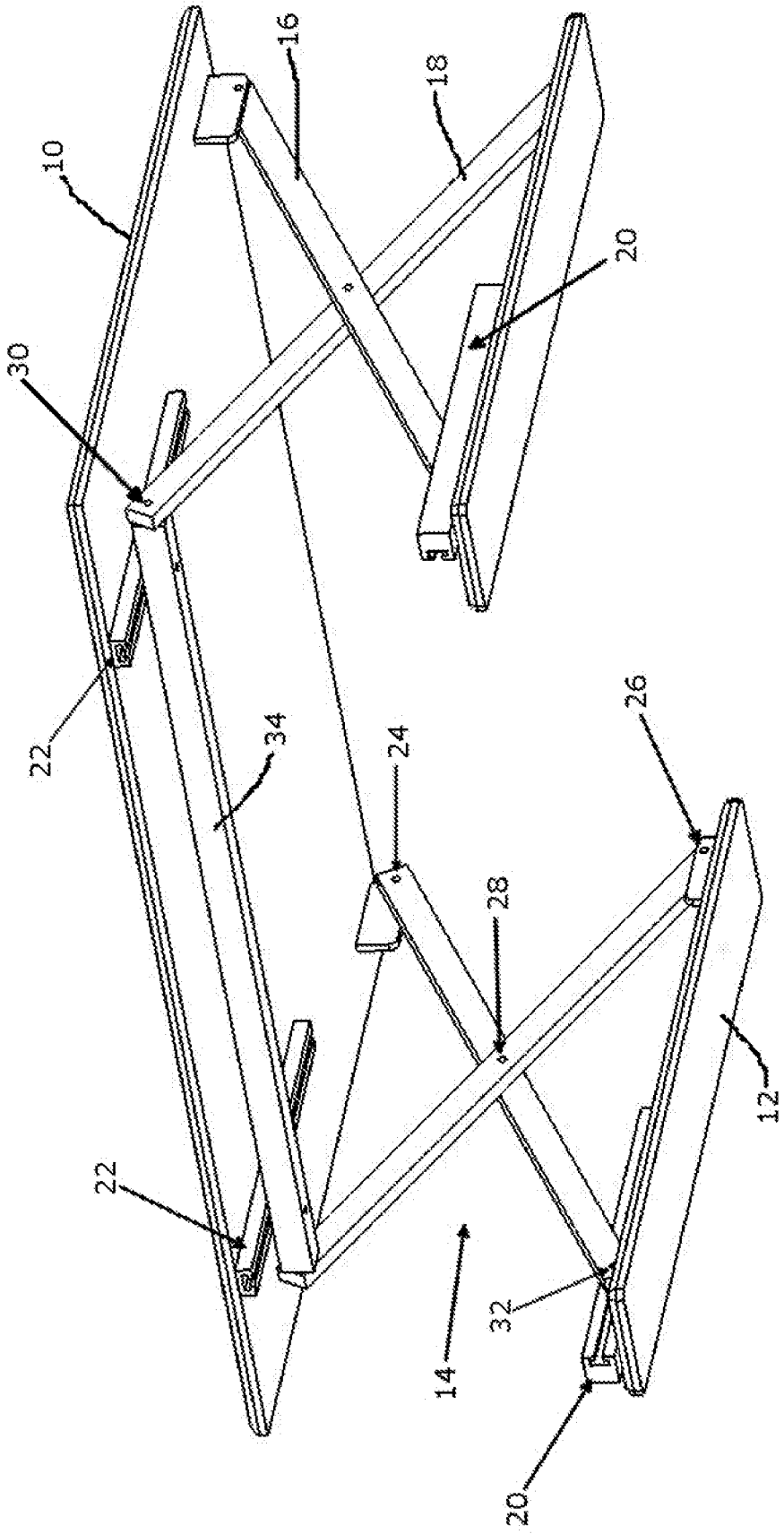


FIG. 2B

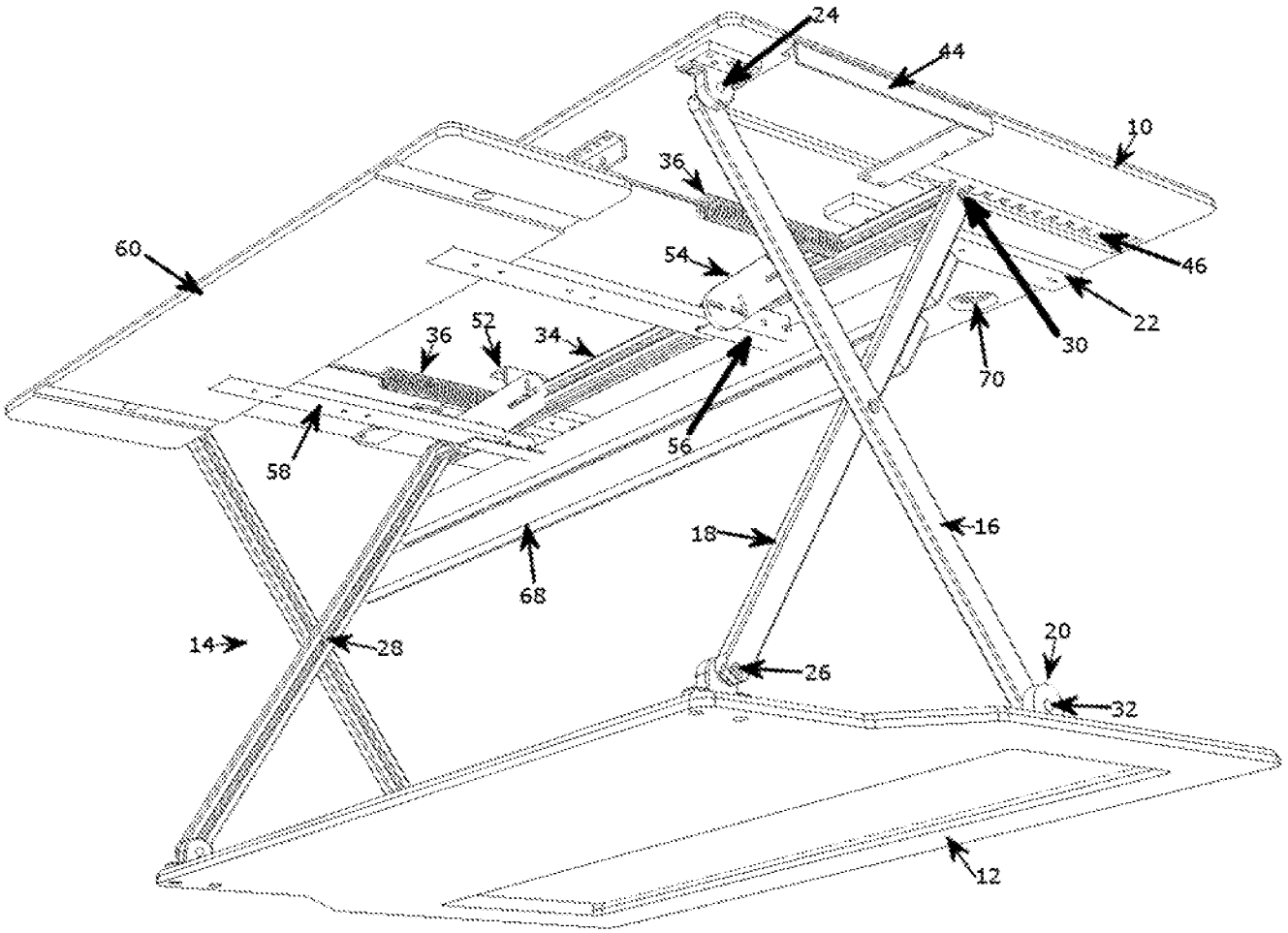


FIG. 2C

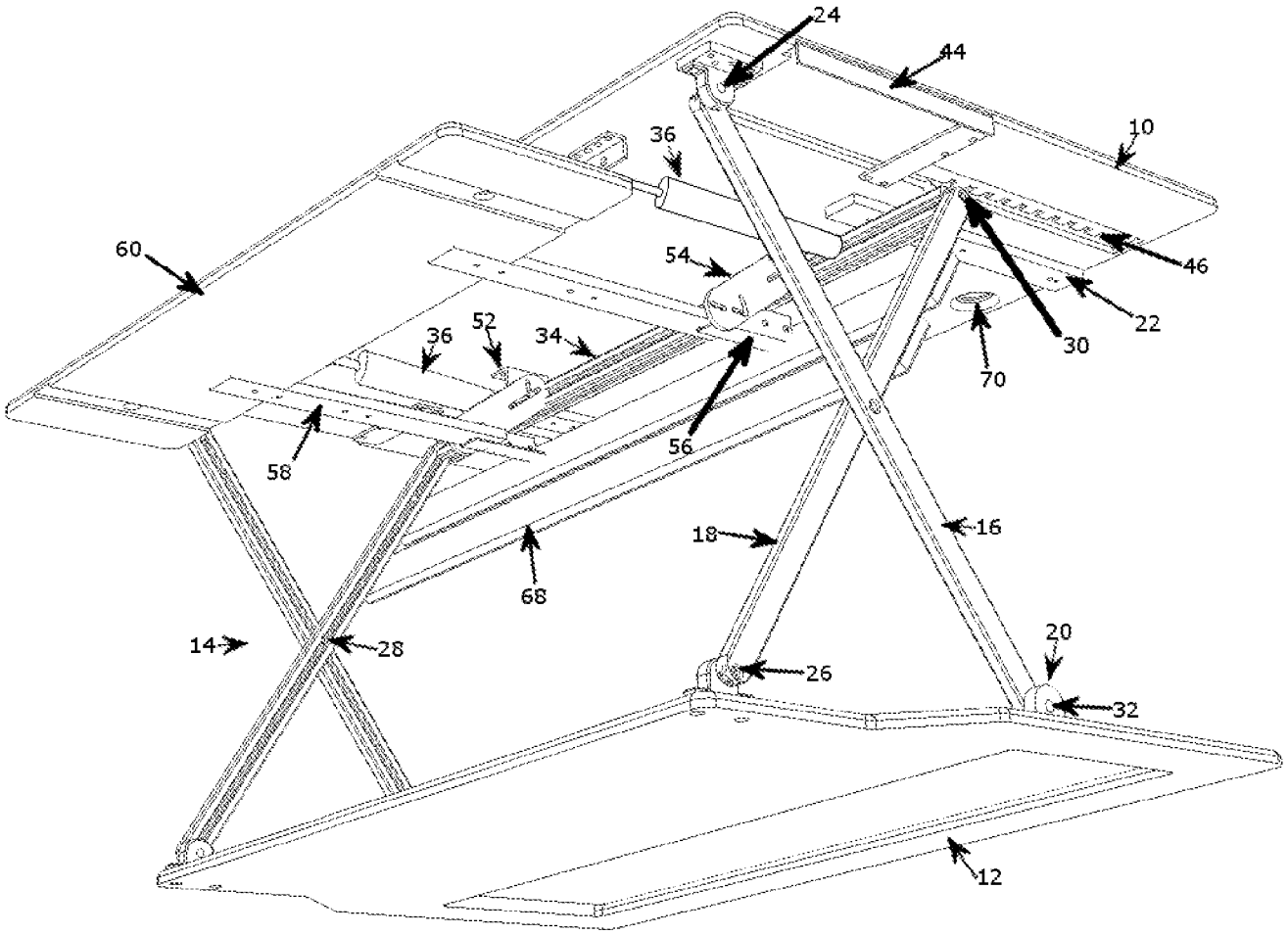


FIG. 2D

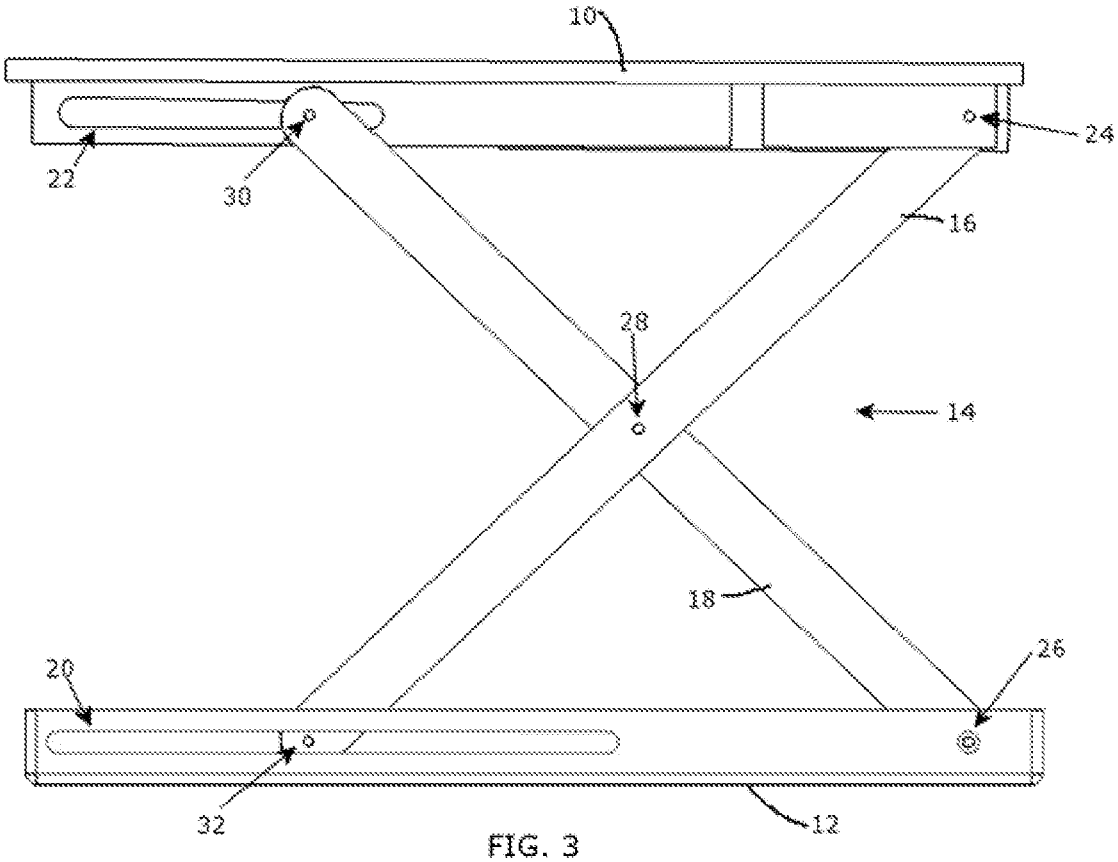


FIG. 3

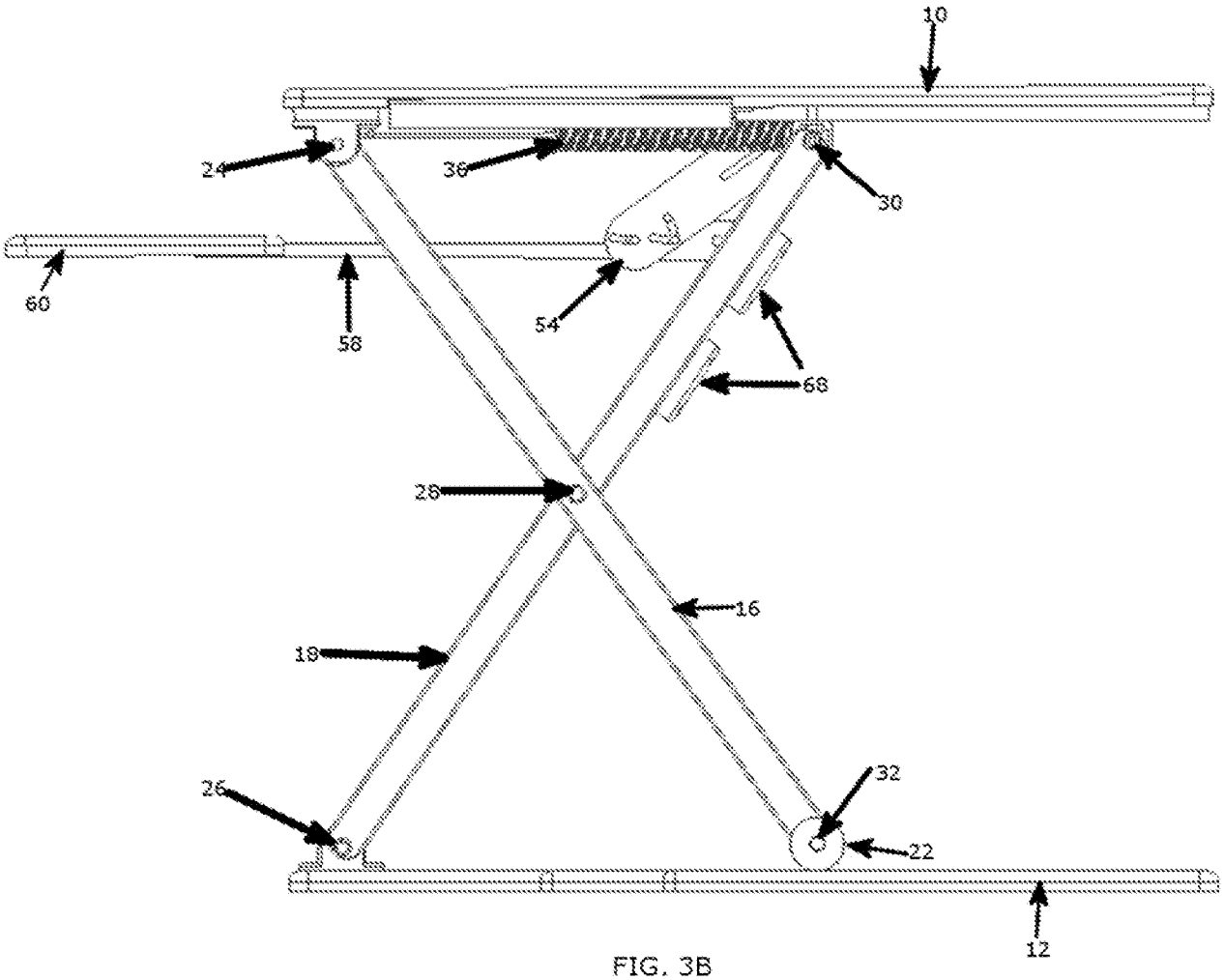


FIG. 3B

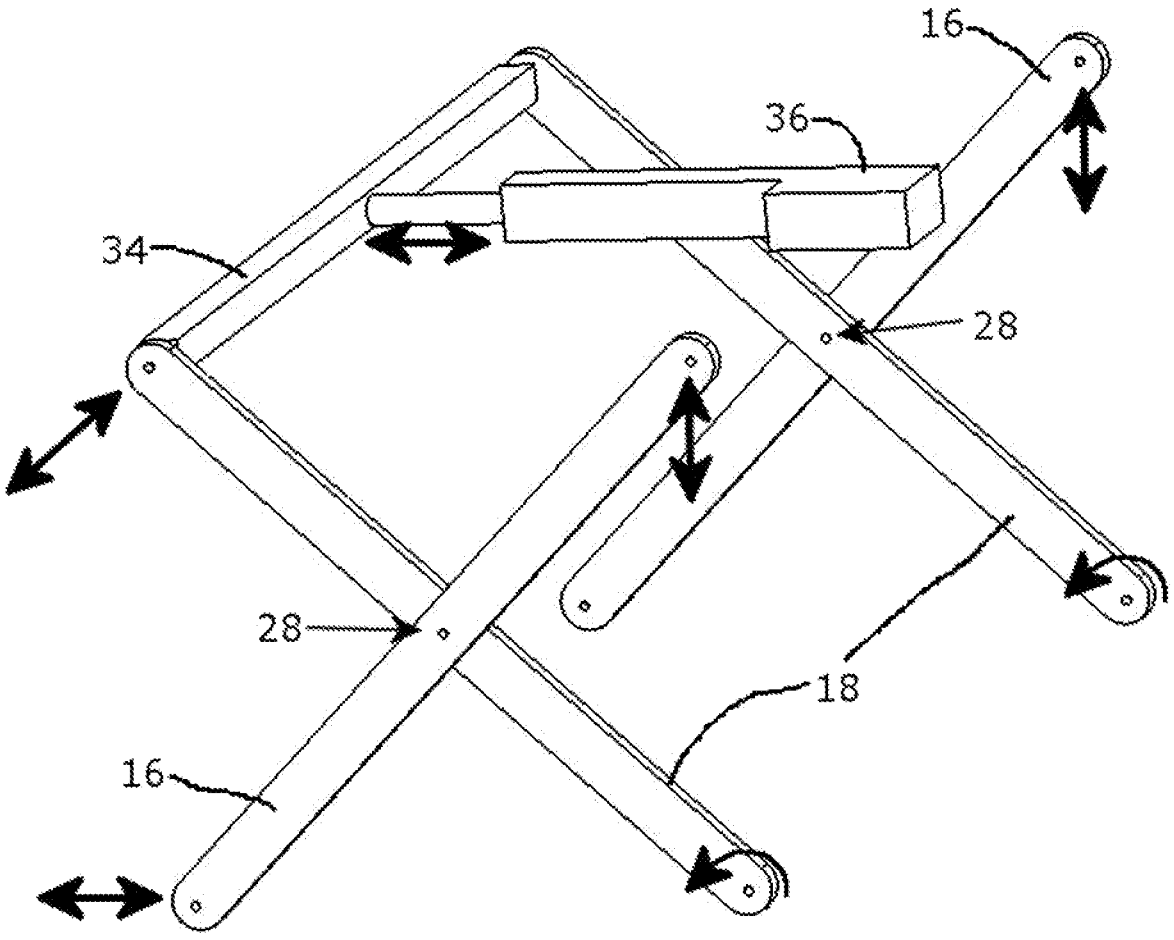


FIG. 4

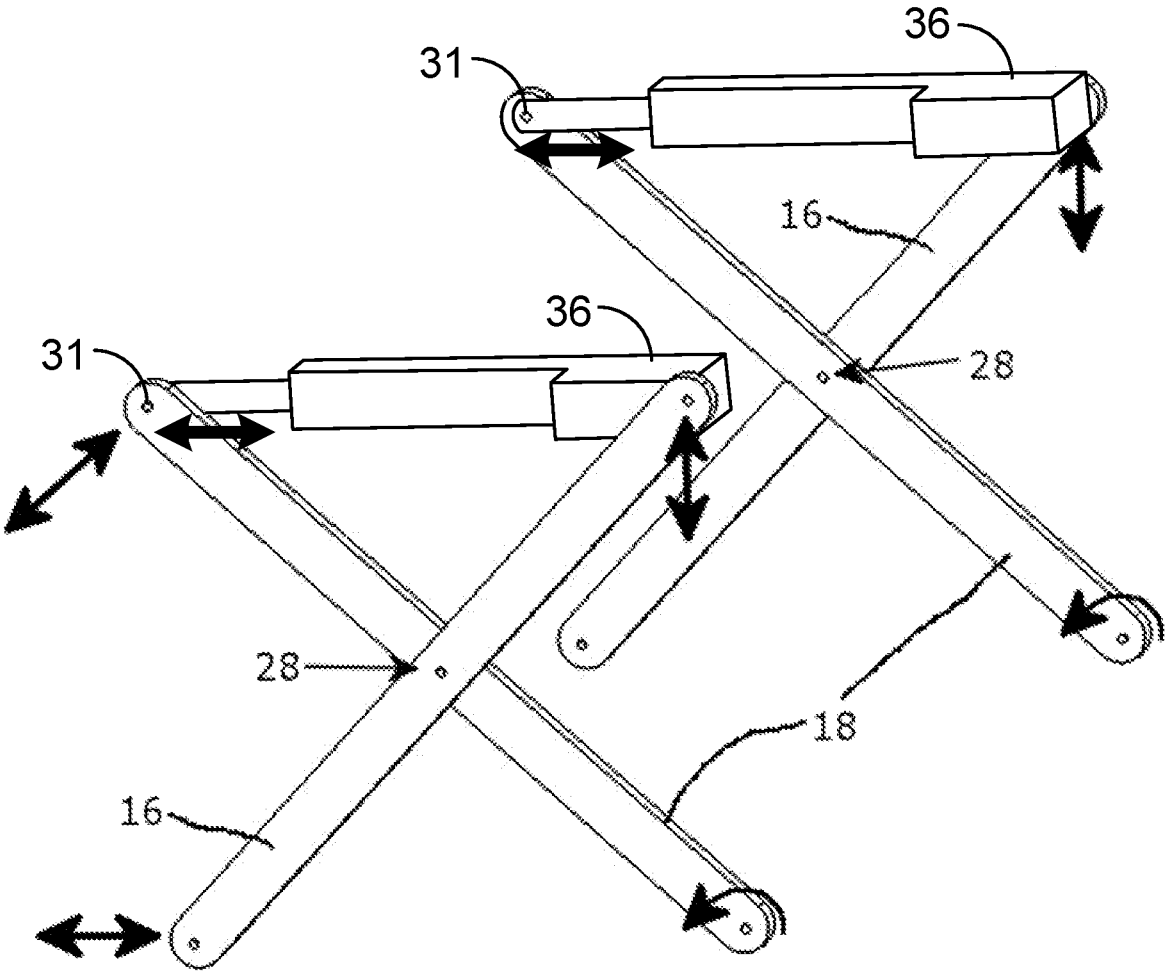


FIG. 4B

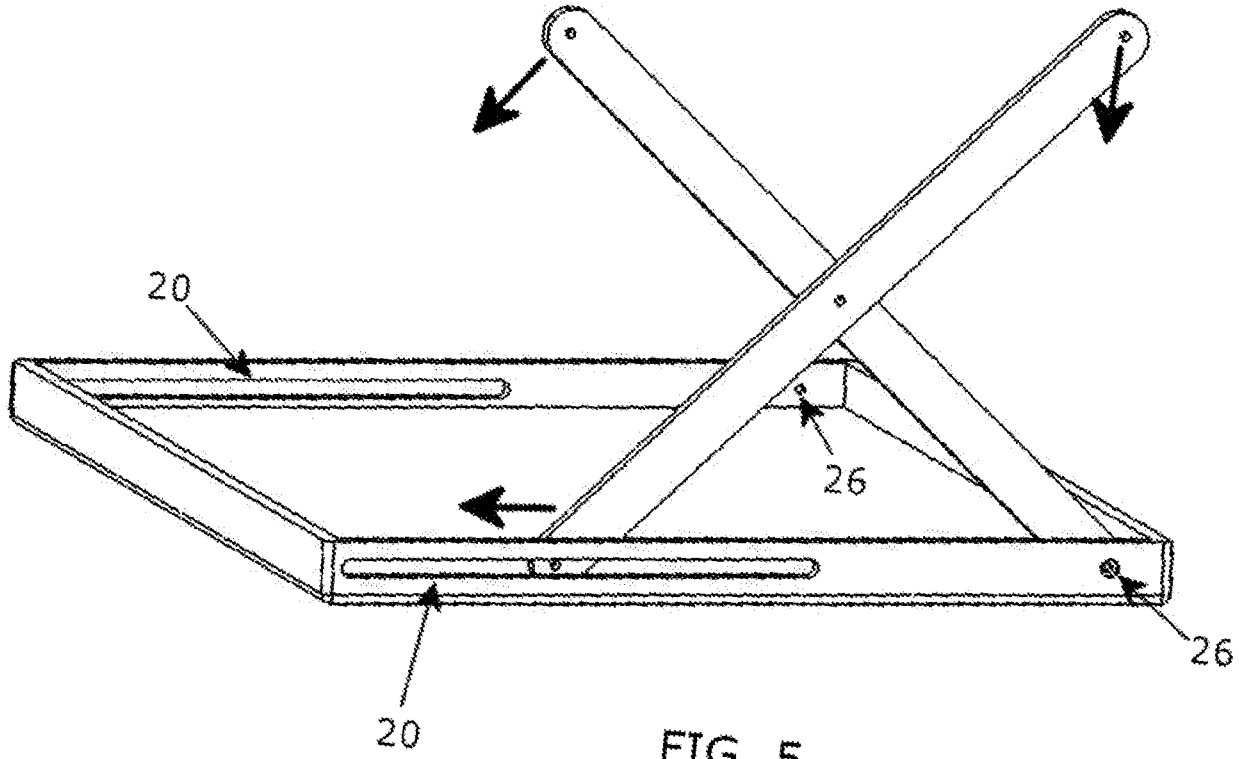


FIG. 5

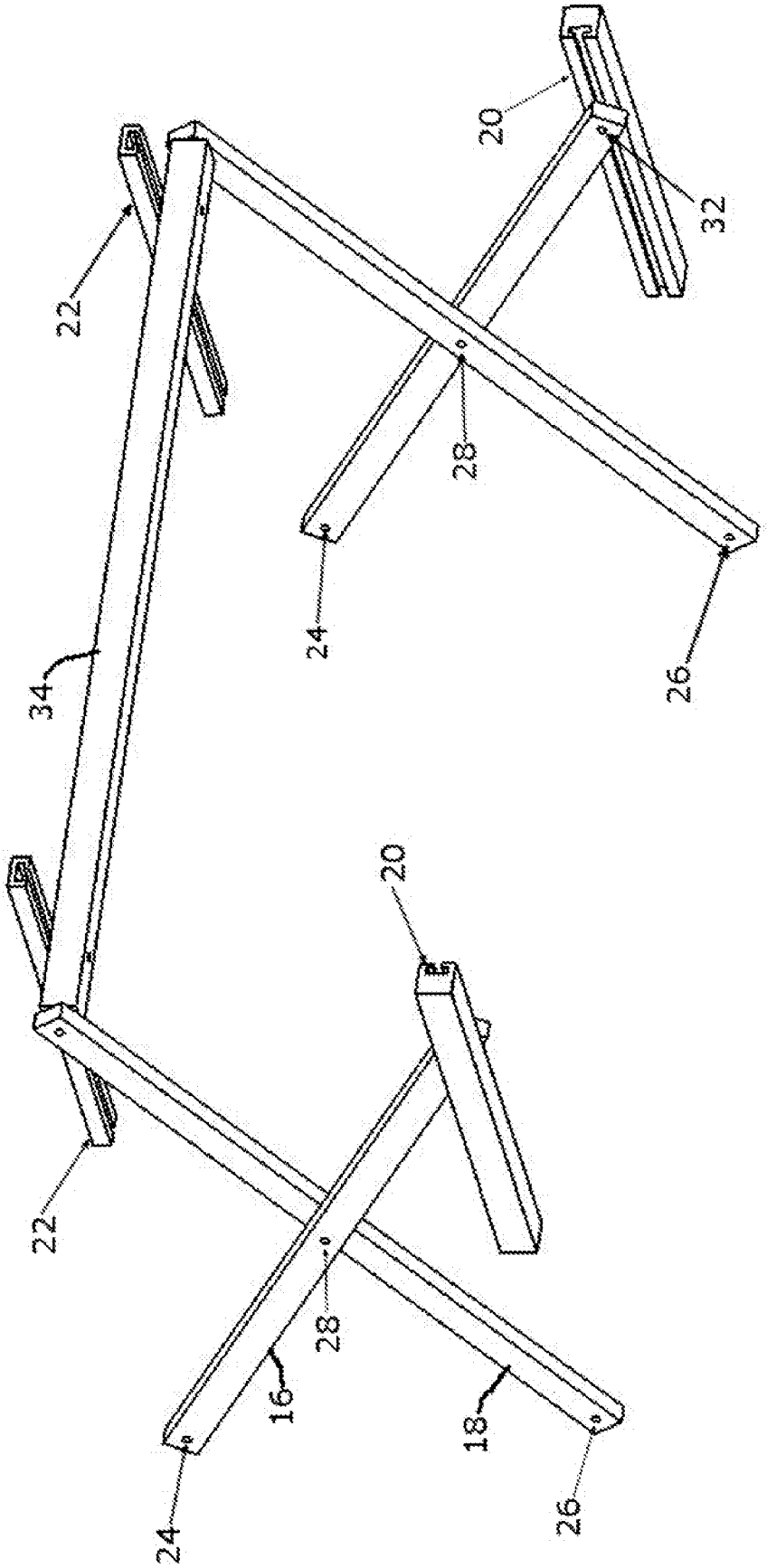


FIG. 5B

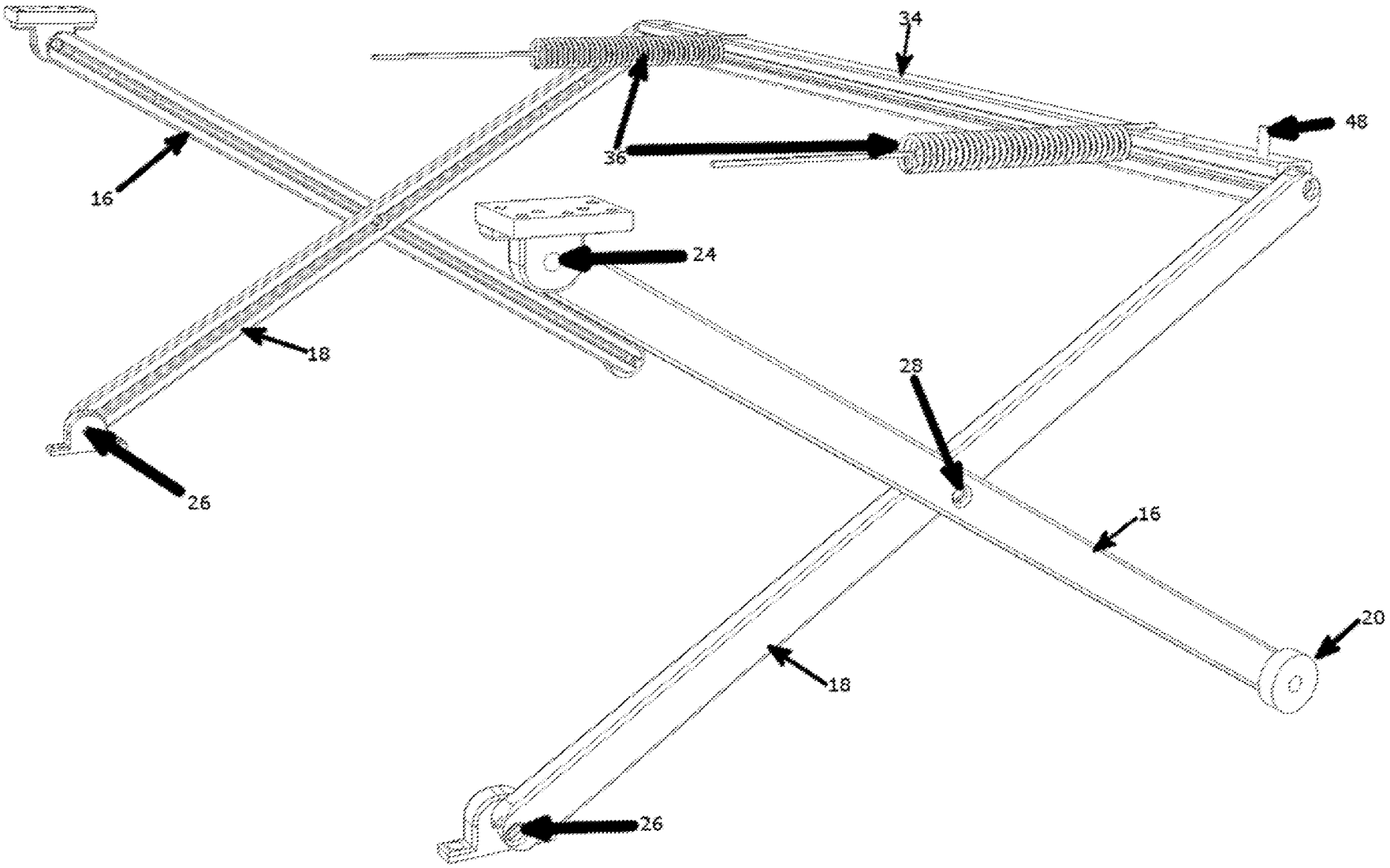


FIG. 5C

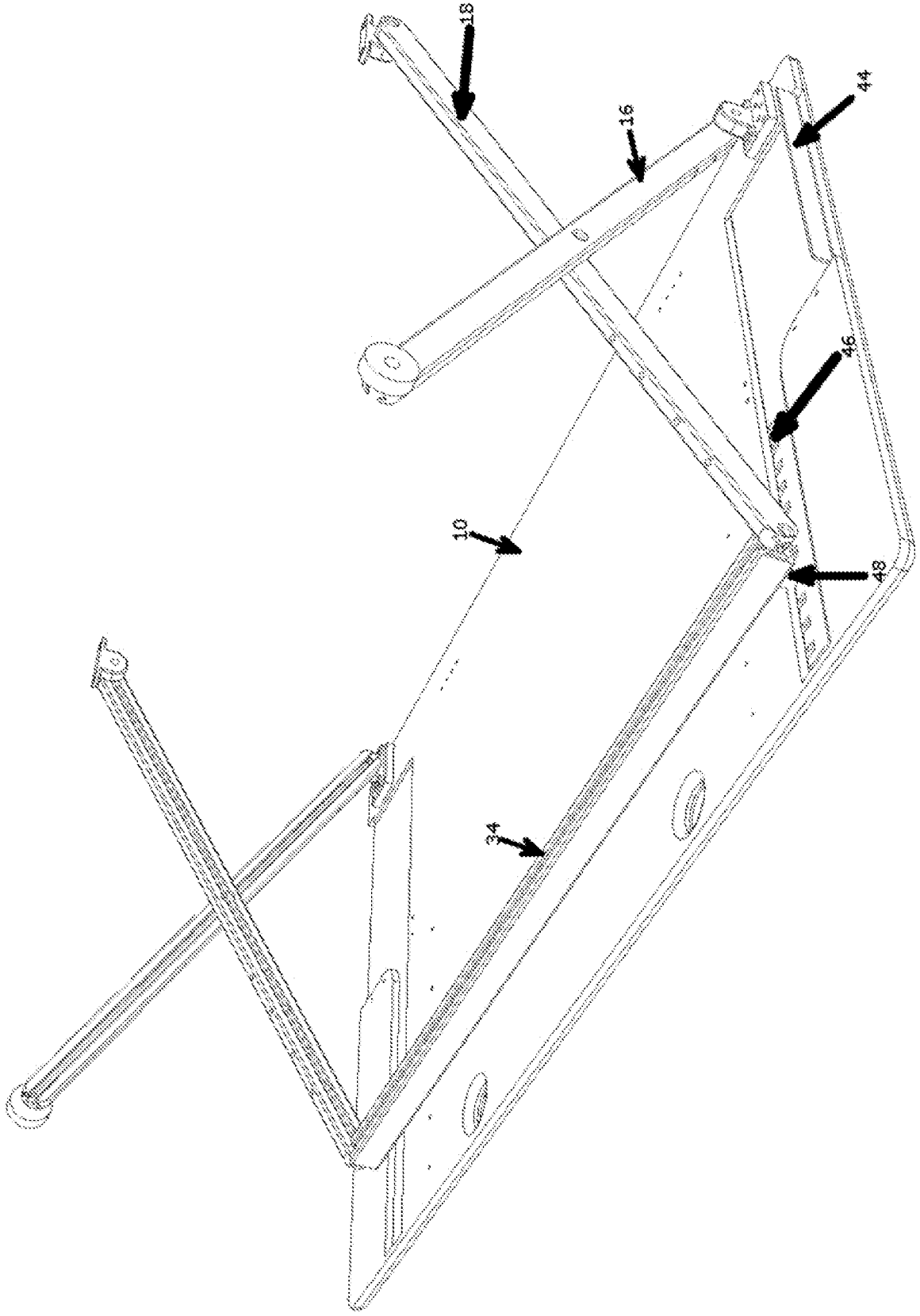


FIG. 5D

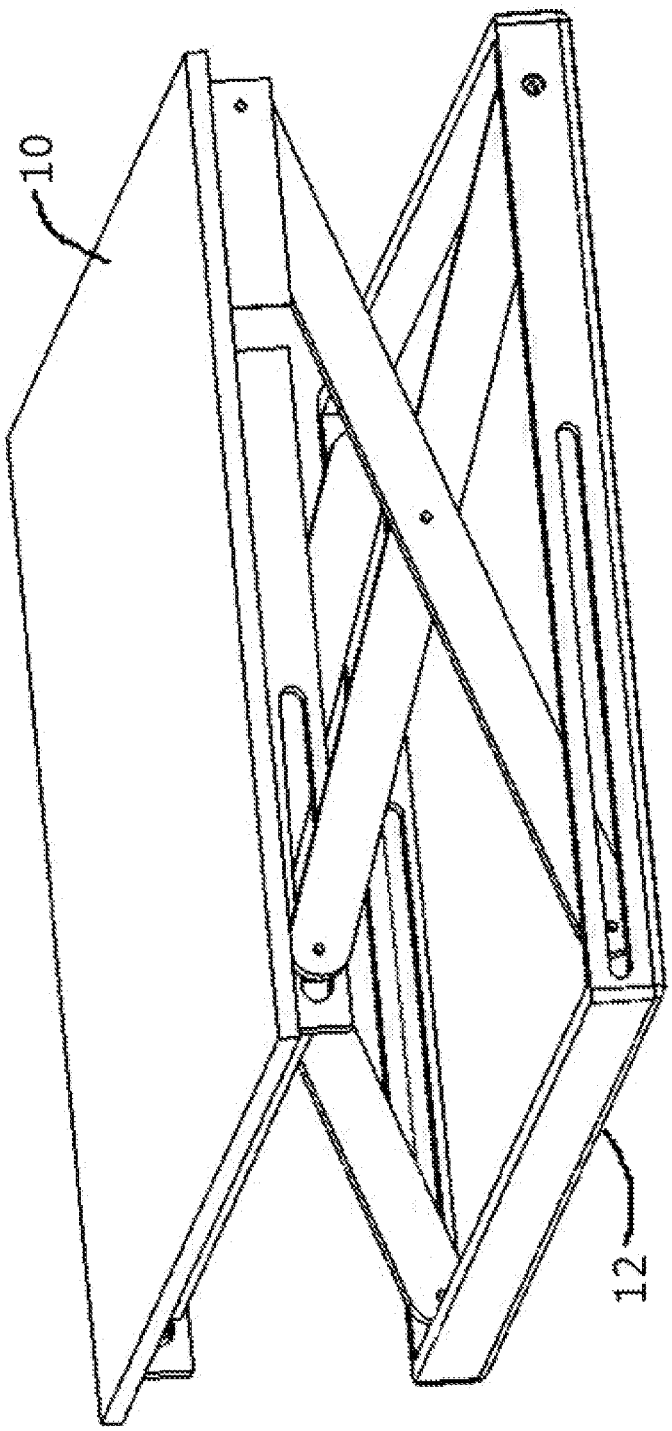


FIG. 6

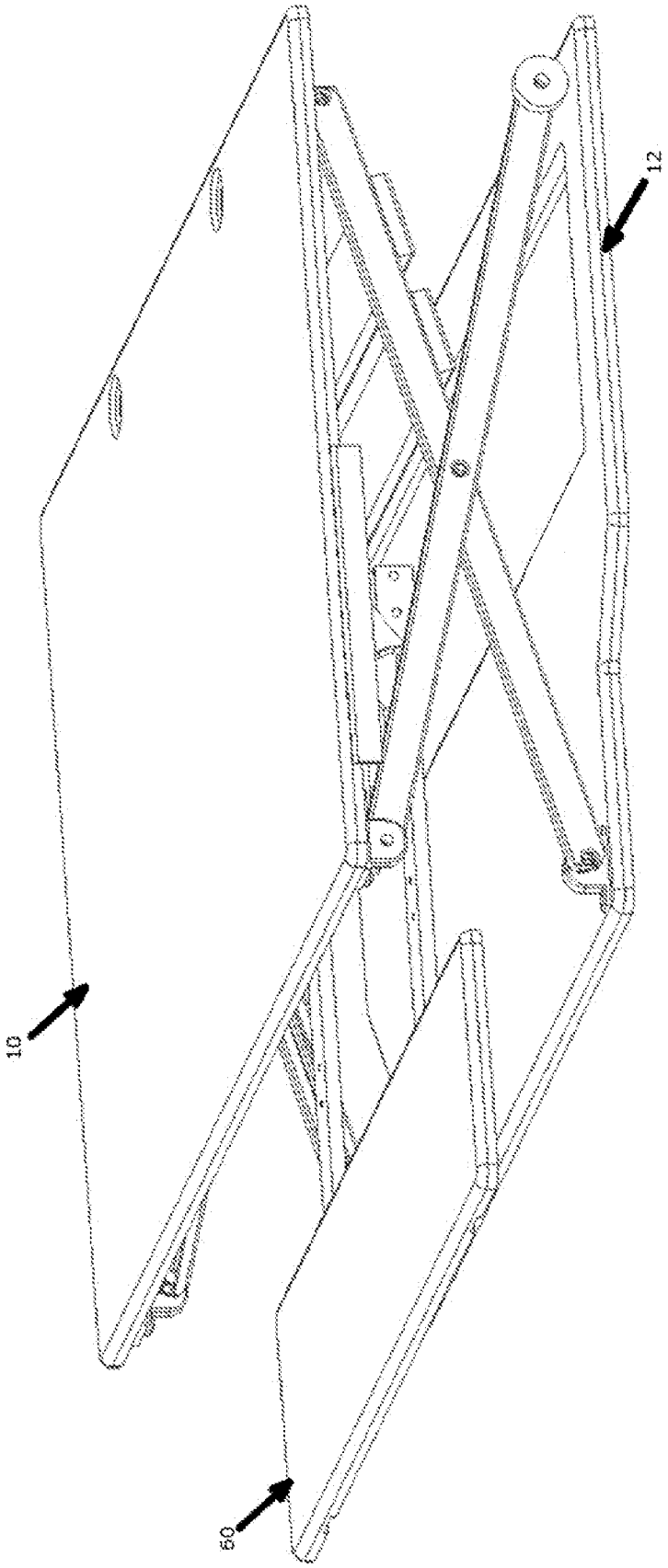


FIG. 6B

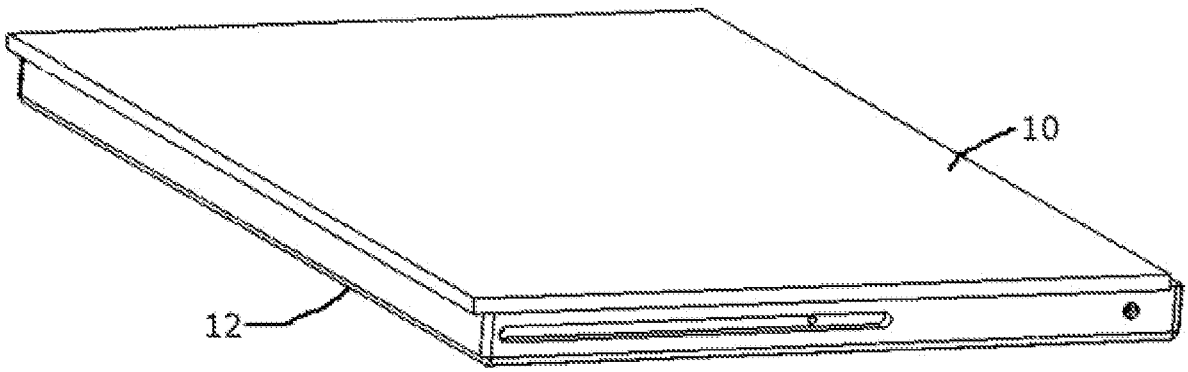


FIG. 7

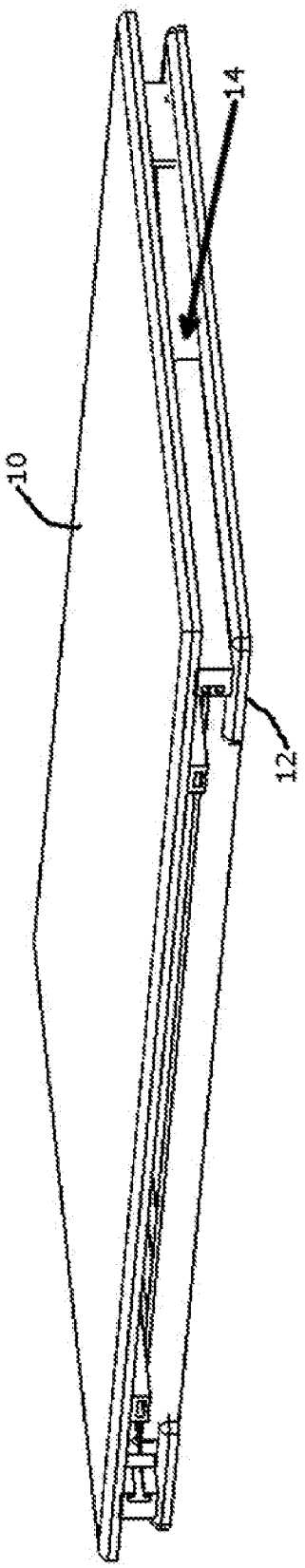


FIG. 7B

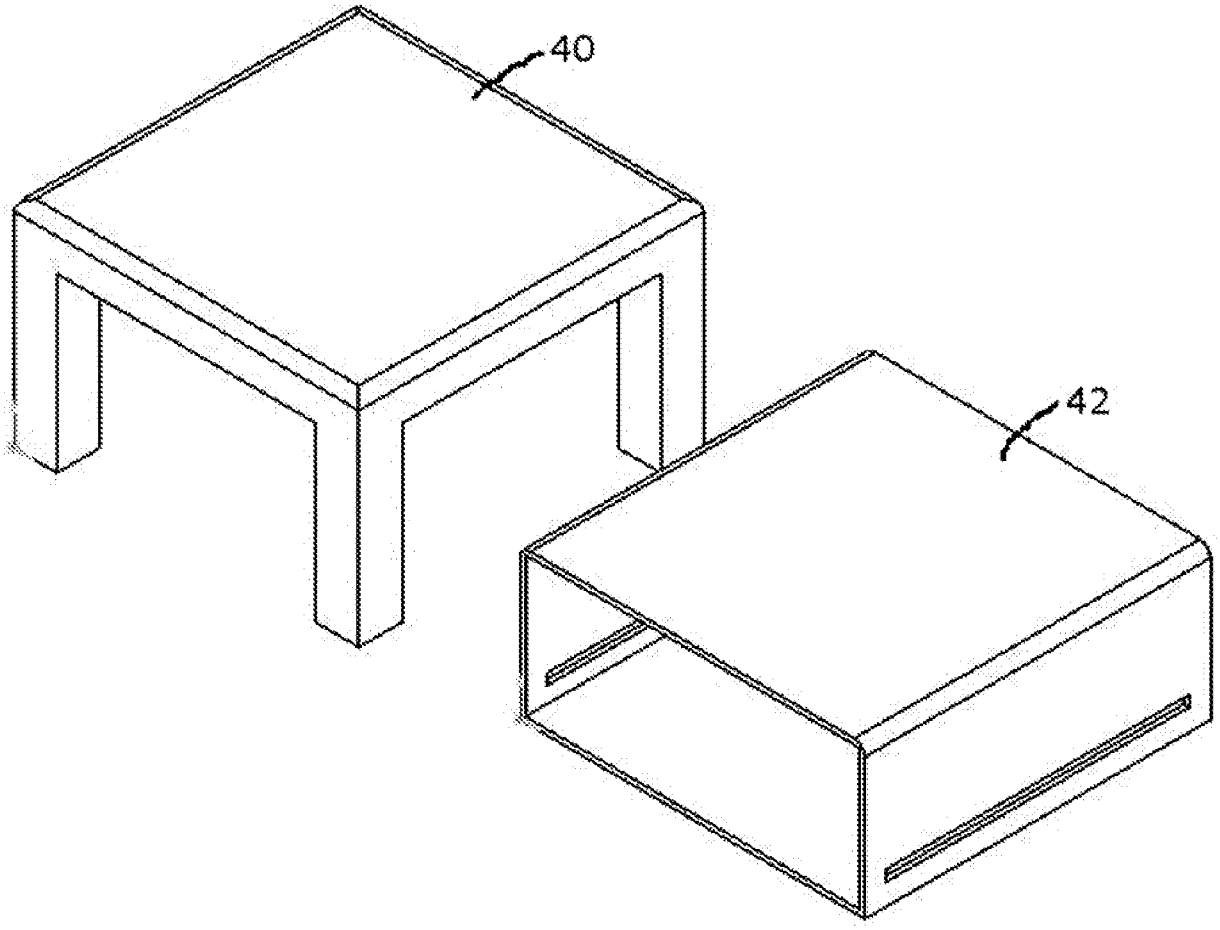


FIG. 8

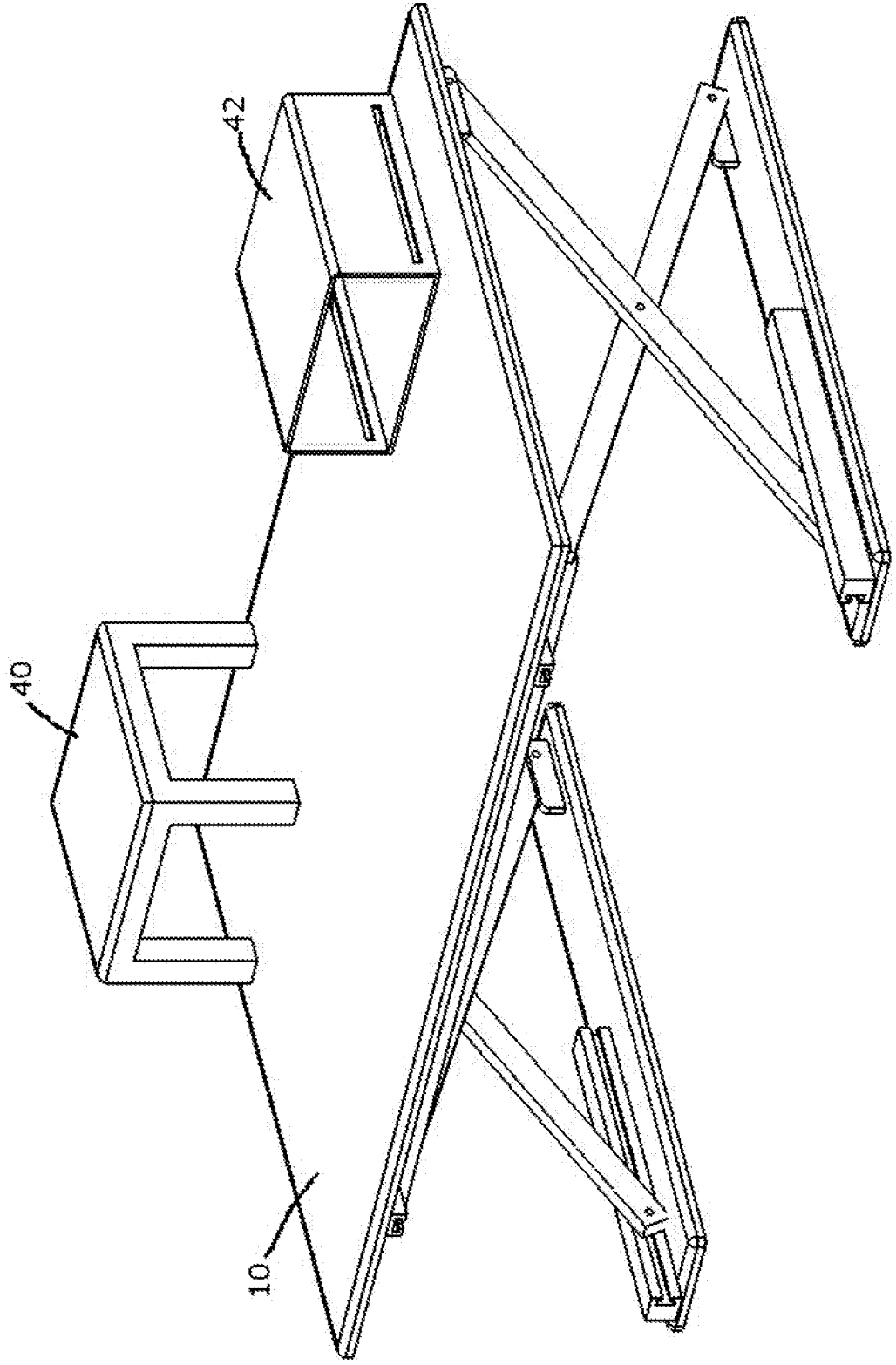


FIG. 9

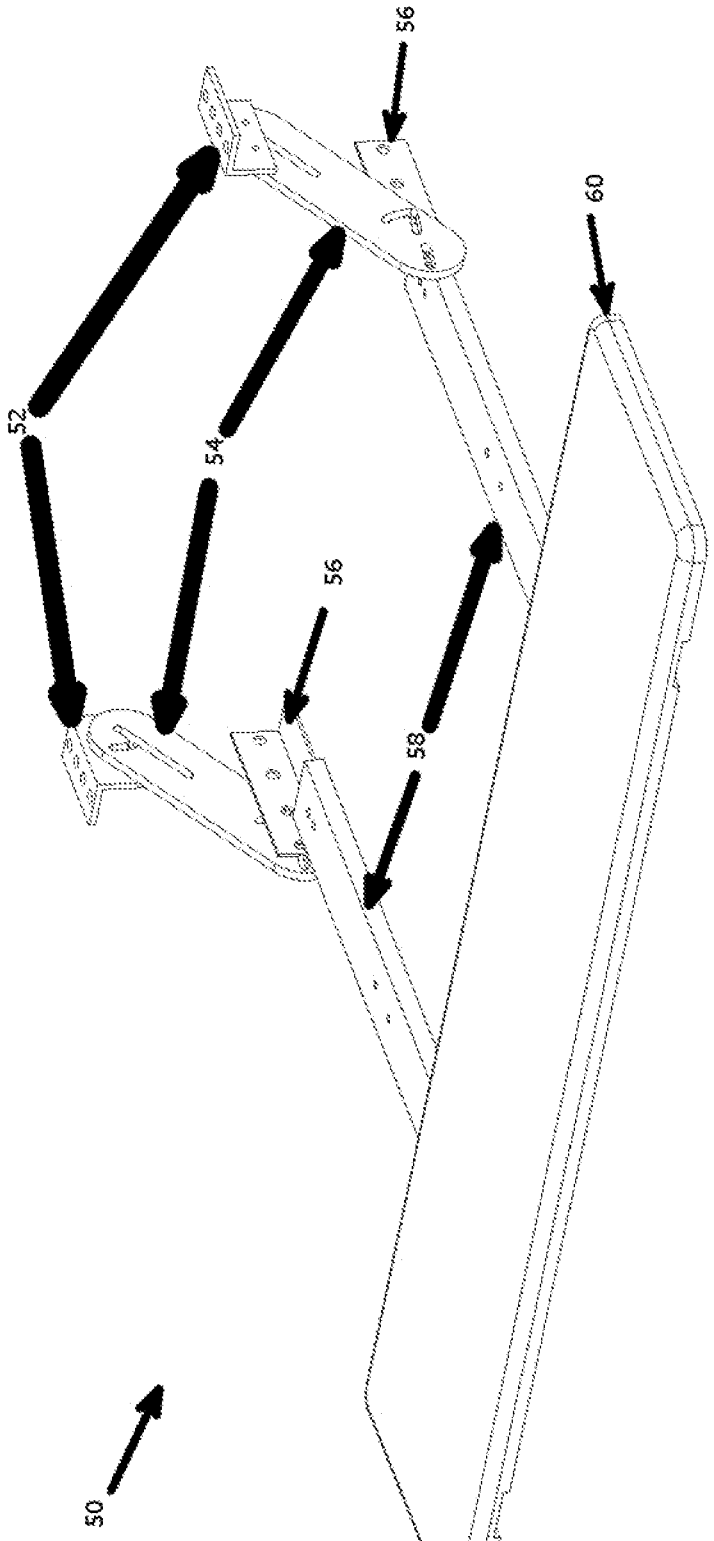


FIG. 10

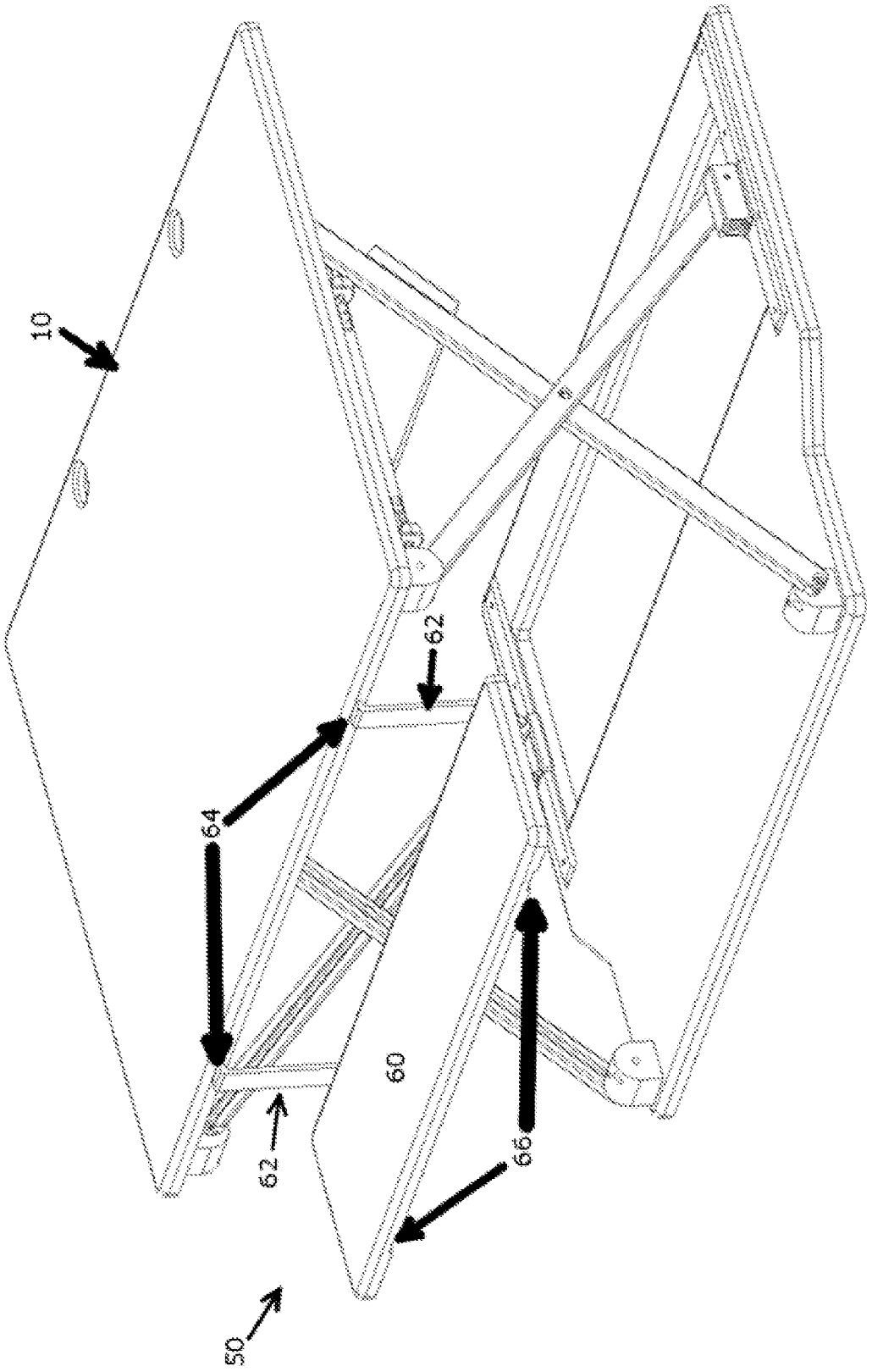


FIG. 10B

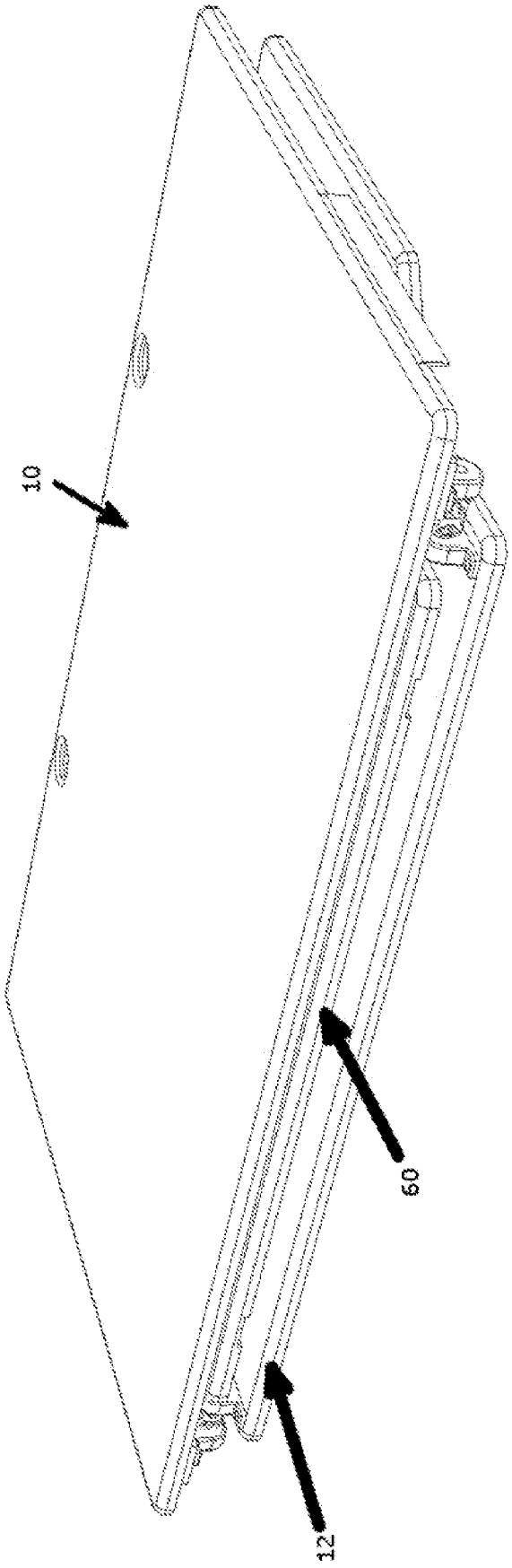


FIG. 10C

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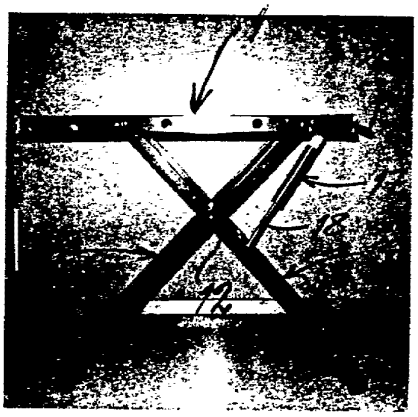
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(57) Abstract

The present invention relates to a table stand for use preferably in caravans and motorhomes, wherein the top of the stand is provided with a frame-like part on which a tabletop is intended to be placed and which is adjustable in the height direction so that the tabletop can be adjusted vertically to different positions. According to the invention, the inventive stand is characterized by the following combination of features: the stand includes at leat two leg members (2, 3) which are hinged or pivotally connected together such as to enable the parts of leg members located on mutually opposite sides of the hinge or pivot (12) to be moved towards and away from one another in a scissor-like fashion; each leg member (2, 3) has at each end thereof a transverse rod (8, 9; 10, 11), of which the lowermost rod (8; 10) functions to support the stand against an underlying supporting surface, whereas the upper rods (9; 11) coact with the frame-like part (1) in a manner such that the parts of the two leg members (2, 3) located on opposite sides of the pivot can be moved towards and away from each other so as to raise or lower the frame-like part (1) in relation to the underlying supporting surface; a gas-spring, or piston-cylinder device (17), so arranged in the stand as to enable the frame-like part (1) of said stand to be adjusted vertically, both downwardly and upwardly, wherein the gas-spring can be blocked in the set position so as to maintain the position of the frame-like part and therewith the position of the tabletop in relation to the underlying supporting surface.

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STAND

The present invention relates to a table stand intended for use preferably in caravans and motorhomes, wherein the stand supports at the top thereof a frame-like part on which a tabletop is intended to be placed and which can be adjusted vertically so as to position the tabletop in different height positions.

The tables provided in caravans/motorhomes normally have the form of a tabletop which is fitted to the top of a stand. This type of table is normally intended for two different purposes. Firstly, the table is intended for use as a conventional dining table, from which food and coffee can be partaken in the caravan/motorhome. Secondly, the table shall be capable of being raised and lowered, so as to enable the tabletop to be lowered to a position in which it will function as part of a bed in the caravan/motorhome. Lowering and raising of the table has hitherto been a complicated process, and consequently time-consuming.

The object of the present invention is to eliminate this problem and to provide a tabletop stand which can be readily handled and manoeuvred when lowering and raising the same. This object has been achieved with a stand of the aforesaid kind which is characterized by the following combination of features:

- The stand includes at least two leg members which are hinged or pivotally connected together such as to enable the parts of said leg members located on mutually opposite sides of the hinge or pivot to be moved towards and away from one another in a scissor-like fashion;

- Each leg member has at each end thereof a transverse rod, of which the lowermost rod functions to support the stand against an underlying supporting surface, whereas the upper rods coact with the frame-like part in a manner such that the parts of the two leg members located on opposite sides of the hinge or pivot can be moved towards and away from each other so as to raise or lower the frame-like part in relation to the underlying supporting surface;

- A gas-spring, or piston-cylinder device, so arranged in the stand as to enable the frame-like part of said stand to be adjusted vertically, both downwardly and upwardly, wherein the gas-spring can be blocked in its position, so as to maintain the position of the frame-like part and therewith the position of the tabletop in relation to the underlying supporting surface. This enables the frame-like part, and therewith the tabletop, to be adjusted continually to any selected vertical position, in which position the gas-spring is locked.

A preferred embodiment of the invention will now be described in more detail with reference to the accompanying drawings, in which Figure 1 shows the inventive stand in a raised position and provided with a lockable gas-spring and a spring operating or activating means; Figure 2 illustrates the stand of Figure 1 in a lowered position; Figure 3 and Figure 4 show the attachment of the gas-spring to the upper part of the stand, wherein Figure 4 shows the attachment from beneath; and Figure 5 illustrates the construction of the operating means.

Figures 1 and 2 illustrate the inventive stand. The stand includes a frame-like part 1 which is carried by two leg members 2, 3. Each leg member 2, 3 includes two substantially parallel rods or bars 4, 5; 6, 7, wherein the two bars of each pair of bars are spaced from one another and are connected together at both ends thereof by means of a respective transverse rod 8, 9; 10, 11, wherein the lowermost transverse rods 8; 10 function to support the stand against the underlying support surface and wherein the upper, transverse rods 9; 11 are intended to coact with the frame-like part 1. The two leg members 2, 3, i.e. the pairs of bars 4, 5; 6, 7 are mutually connected by means of a hinge means or pivot in the form of a transverse rod 12, which extends through the bars approximately midway therealong the rods, preferably at a location which is slightly above centre. This enables the two ends of respective pairs of bars 4, 5; 6, 7 to be moved towards and away from each other in a scissor-like fashion and therewith move the frame-like part 1 vertically.

The frame-like part 1 and bars of the illustrated embodiment are made of varnished or lacquered steel plate and the frame-like part includes four bars 13-16 disposed in the form of a rectangle. The stand may, of course, be made of some other material and the frame-like part 1 may have the form of a square. At least two of the frame bars, the longitudinally extending bars 14, 15 of the illustrated embodiment have a substantially U-shaped cross-section with the legs of the U facing inwards. The upper transferse rods 9, 11 of the two leg members 2, 3 are intended for coaction with the frame bars 14, 15. The one rod 9 is pivotally mounted in the bars 14, 15, whereas the other transverse rod 11 is provided at both ends with suitable means for

sliding in the U-shaped part of the bars in order to achieve the aforesaid scissor-like movement of the leg members.

An essential feature of the invention is that a blockable gas-spring 17, or piston-cylinder device, is provided for enabling the position of the frame-like part 1 to be adjusted vertically in a smooth continuous fashion, both in an upward and in a downward direction. The gas-spring includes a bottom part 18 which is pivotally connected to the leg member 3 beneath the pivot rod 12, and an upper part 19 which is pivotally connected to the transverse frame-bar 15 on the same side of a vertical plane passing through the rod 12 as the lower part 18 (see also Figures 3, 4).

The gas-spring 17 is provided with a centrally positioned pin 20 which protrudes slightly from the upper part 19 of the gas-spring in an axial direction. This pin 20 is intended to activate a release valve provided within the gas-spring.

The pin 20 is intended to coact with a cylindrical bushing 21 which is pivotally connected to a holder means 23, by means of screws 22 or the like, said holder means being mounted on the inside of the frame bar 15. The pin 20 thus extends straight through the bushing 21 in its transverse direction and protrudes slightly beyond the bushing for coaction with an operating means or activator 24 (see also Figure 5). Because the bushing 21 is pivotally connected to the holder means 23 and because the bottom part 18 of the gas-spring 17 is pivotally connected to the leg member 3, the gas-spring will take different angular positions in relation to the frame-like part 1 of the stand and the

leg member 3. According to this embodiment, the leg member 3 includes two parallel bars or rods 6, 7. The bottom part 18 of the gas-spring 17 is therewith pivotally connected to a transverse rod 25, which mutually connects the bars or rod 6, 7 and which is positioned beneath the hinge or pivot rod 12.

The operating means 24 has an elongated shape and has a handle 26 provided on the rear thereof and a part 27 which functions to engage the end of the pin 20 on the front thereof. The part 27 is provided with a hole 28 by means of which the operating means is pivotally conencted to the holder means 23 substantially immediately above the pivot 22 for attachment of the bushing 21. The position of the pivot 22 has been referenced x in Figure 5. The forward part 27 of the operating means 24 is also provided with a concave recess 29 which is intended to abut the end of the pin 20 and which includes substantially 90° of a circle. The radii R of the recess 29 are therewith essentially the same, taken from the x. One important advantage afforded hereby is that the force exerted on the pin 20 by the operating means will act substantially in the longitudinal direction of the pin, irrespective of the height position of the stand, i.e. irrespective of the angle between the operating means 24 and the longitudinal axis line of the pin 20. This fact enables the gas-spring 17 to be operated effectively. When the pin 20 is pressed inwardly by means of the operating means 24, the release valve in the gas-spring will open. The gas-spring is thereby compressed with a force which is greater than the resistance exerted by the gas-spring, which takes place when the stand is to be pressed down to a low level. If it is wished to maintain the stand at this low level, the pressure on the pin is removed, thereby

causing the pin to return to its starting position. This closes the release valve in the gas-spring and the spring will thereby be blocked and function as a rigid rod. When wishing to raise the stand, the pin 20 is pressed-in by means of the operating means 24, thereby raising the frame part of the stand to the desired position, whereafter the pressure on the pin 20 is removed.

It will be understood that the invention is not restricted to the described embodiment and that modifications can be made within the scope of the following Claims. For instance, each leg member may consist of a single rod instead of two mutually connected rods, as illustrated in the described embodiment.

Claims

1. A table stand for use preferable in caravans and motorhomes, wherein the top of the stand is provided with a frame-like part on which a tabletop is intended to be placed and which is adjustable vertically so as to enable the tabletop to be adjusted to different vertical heights, c h a r a c t e r i z e d by the following combination of features;

- The stand includes at least two leg members (2, 3) which are hinged or pivotally connected together such as to enable the parts of said leg members located on mutually opposite sides of the hinge or pivot (12) to be moved towards and away from one another in a scissor-like fashion;

- Each leg member (2, 3) has at each end thereof a transverse rod (8, 9; 10, 11), of which the lowermost rod (8; 10) functions to support the stand against an underlying supporting surface, whereas the upper rods (9; 11) coact with the frame-like part (1) in a manner such that the parts of the two leg members (2, 3) located on opposite sides of the pivot can be moved towards and away from each other so as to raise or lower the frame-like part (1) in relation to the underlying supporting surface;

- A gas-spring, or piston-cylinder device (17), so arranged in the stand as to enable the frame-like part (1) of said stand to be adjusted vertically, both downwardly and upwardly, wherein the gas-spring can be blocked in a set position so as to maintain the position of the frame-like part and therewith the position of the tabletop in relation to the underlying

supporting surface.

2. A stand according to Claim 1, c h a r a c - t e r i z e d in that the gas-spring (17) has an upper part (19) which is pivotally connected to the frame-like part (1) on one side of a vertical plane which passes through the pivot (12), and a lower part (18) which is pivotally connected to the leg member (3) on the same side of said vertical plane as the upper part (19) and beneath the pivot (12).

3. A stand according to Claim 2, c h a r a c - t e r i z e d in that the gas-spring (17) is provided with a centrally located pin (20) which projects slightly beyond the upper part (19) of the gas-spring in its longitudinal direction and which is intended to activate a release valve located the gas-spring (17).

4. A stand according to Claim 3, c h a r a c - t e r i z e d in that the pin (20) passes transversely through a bushing (21) which is pivotally connected to a holder means (23) mounted in the frame-like part (1); and in that the pin (20) is intended to be activated by means of an operating means (24) which is pivotally connected to the holder means (23).

5. A stand according to Claim 4, c h a r a c - t e r i z e d in that the pivot for the operating means (24) in the holder means (23) is arranged substantially immediately above the pivot (22) for the bushing (21).

6. A stand according to Claim 5, c h a r a c - t e r i z e d in that the operating means (24) includes a rear part in the form of a handle (26) and a

front part (27) which is intended for coaction with the pin (20); and in that said part is provided with a concave recess (29).

7. A stand accroding to Claim 6, c h a r a c t e r i z e d in that the recess (29) includes substantially 90° of a circle; and in that the radii of the recess are substantially the same, taken from the pivot (22) referenced X.

8. A stand according to any one of the preceding Claims, c h a r a c t e r i z e d in that each leg member (2, 3) includes two substantially parallel bars (4, 5; 6, 7) which are mutually connected at the bottom thereof by the transverse rod (8; 10) and at the top thereof by the transverse rod (9; 11), said upper rods (9; 11) being intended for coaction with the frame-like part (1).

9. A stand according to Claim 8, c h a r a c t e r i z e d in that the frame-like part (1) comprises four bars (13-16) which are disposed in the shape of a square or a rectangle, wherein two mutually opposite bars (14, 16) are intended for coaction with the upper rods (9; 11); and in that said two bars (14, 16) have a U-shaped cross-section, wherein the legs of the U of the one bar are directed towards the legs of the U on the other bar (16).

10. A stand according to Claim 9, c h a r a c t e r i z e d in that the one (9) of said two upper rods is pivotally connected to the bars (14, 16), whereas the other (11) of said two upper rods is provided at both ends thereof with suitable means for

enabling sliding in the U-shaped part of the two bars (14, 16).

11. A stand according to Claim 10, in which the bar (15) connects the bars (14, 16) at one of their two ends and thus extend substantially at right angles to said bars, c h a r a c t e r i z e d in that the holder means (23) is disposed substantially opposite the bar (15) and has an extension inwardly towards the centre of the frame-like part.

Figure 1.

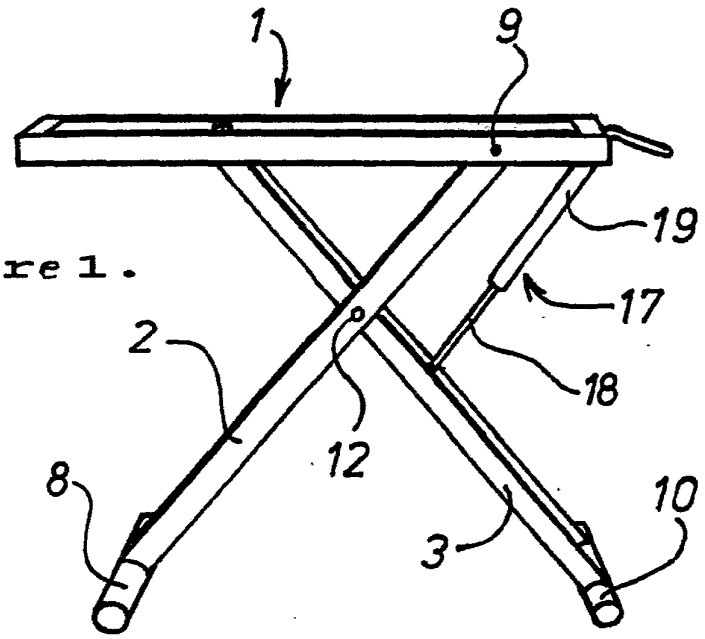
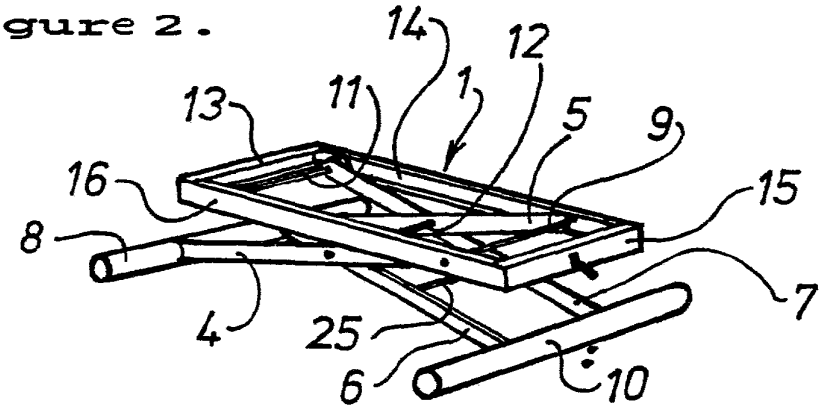


Figure 2.



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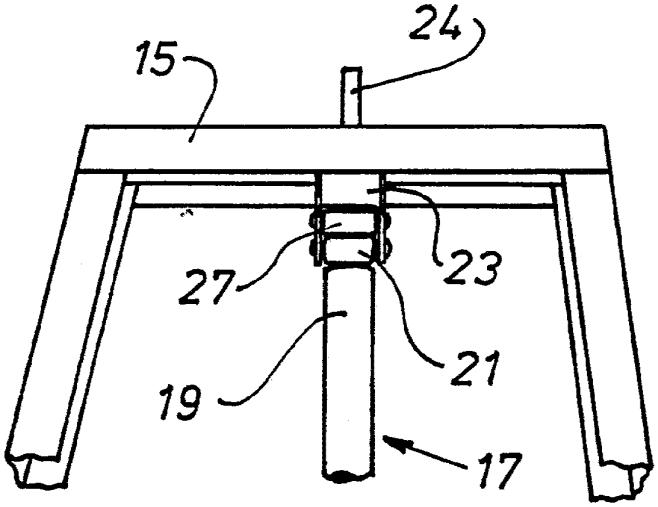
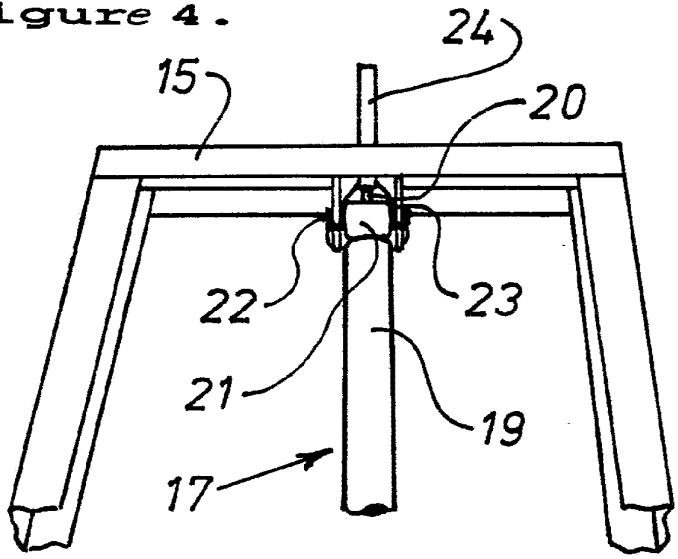


Figure 3.

Figure 4.



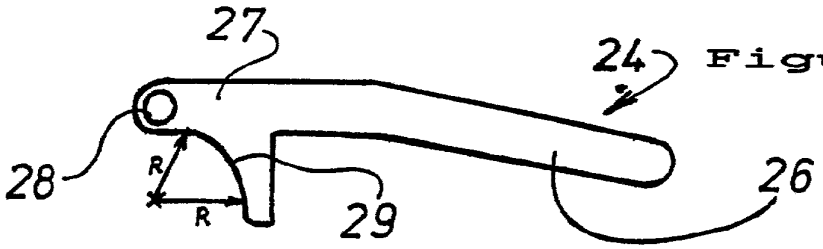


Figure 5.

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INTERNATIONAL SEARCH REPORT

International Application No PCT/SE 91/00364

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC5: B 60 P 3/36, A 47 B 9/16

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
IPC5	B 60 P; A 47 B

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in Fields Searched[8]

SE,DK,FI,NO classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category *	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
Y	DE, A1, 3104182 (ROSSINI, GIOVANNI, MOZZANICA & CAPETTI, AUGUSTO, CARAVAGGIO) 24 December 198 , see the whole document --	1-6,8-11
Y	DE, B, 1261990 (OLGA EMILIE EGGER ET AL) 29 February 1968, see the whole document --	1-6,8-11
Y	DE, A1, 3439422 (BRUNN, OSWALD) 30 April 1986, see the whole document --	1-6,8-11
Y	EP, A2, 0133523 (FRITZ BAUER + SÖHNE OHG) 27 February 1985, see the whole document --	1-6,8-11

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
14th August 1991	1991 -08- 19
International Searching Authority	**Signature of Authorized Officer**
SWEDISH PATENT OFFICE	Hans Nordström

Form PCT/ISA/210 (second sheet) (January 1985)

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
Y	US, A, 4558648 (FRANKLIN ET AL.) 17 December 1985, see the whole document -- --------	1-6,8- 11

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. PCT/SE 91/00364

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The members are as contained in the Swedish Patent Office EDP file on 91-06-27
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Patent document cited in search report	Publication date	Patent family member(s)		Publication date
DE-A1- 3104182	81-12-24	NONE		
DE-B- 1261990	68-02-29	NONE		
DE-A1- 3439422	86-04-30	NONE		
EP-A2- 0133523	85-02-27	DE-A-	3470451	88-05-26
US-A- 4558648	85-12-17	CA-A-	1233461	88-03-01
		EP-A-	0142919	85-05-29
		JP-A-	60167896	85-08-31

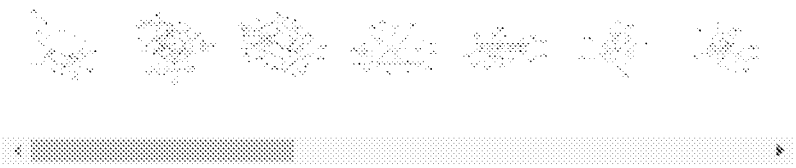
Patents WO-2018093007-A1

Device for elevating lift table

Abstract

Disclosed is a device for elevating a lift table comprising: a lower frame; an upper frame; a leg member; a roller member; a roller connection shaft; and an operating member, wherein one end of the operating member is connected to the roller connection shaft, and the other end of the operating member is connected to a leg other than a leg that is connected to the roller connection shaft from a plurality of legs constituting the leg member. Therefore, the roller connection shaft can replace a structure for connecting the one end of the operating member, and thus there is an advantage in that the structure for connecting the operating member is minimized and simplified.

Images (20)



Classifications

- A47B13/02 Underframes

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WO2018093007A1
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Other languages: French, Korean

Inventor: 배상원, 강성택, 장영일, 이명춘, 공주식

Worldwide applications

2017 WO

Application PCT/KR2017/006656 events

2016-11-21 Priority to KR1020160155335A
2016-11-21 Priority to KR1020160155332
2016-11-21 Priority to KR10-2016-0155332
2016-11-21 Priority to KR10-2016-0155335
2017-06-23 Application filed by 공성에이스산업(주)
2018-05-24 Publication of WO2018093007A1

Info: Patent citations (5), Cited by (2), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, PatentScope, Discuss

Claims (25)

Hide Dependent

1. A lower frame placed on the installation surface;

   An upper frame that can be elevated relative to the lower frame;

   A leg member connected between the lower frame and the upper frame so that a relative height of the upper frame relative to the lower frame can be changed;

   A roller member connected to the leg member, the roller member being movable along at least one of the upper frame and the lower frame when the upper frame moves up and down according to the rotation of the leg member;

   A roller connecting shaft which moves along the same frame of the upper frame and the lower frame and connects pairs of rollers constituting the roller member; And

   The upper frame is operated to smoothly move up and down, one end of which is connected to the roller connecting shaft, the other end of the plurality of legs constituting the leg member is connected to the other leg of the leg connected to the roller connecting shaft Lifting device for a lift table comprising a working member connected.

   2. The method of claim 1,

      A pair of upper rollers moved along the upper frame among the rollers connected by the roller connecting shaft are installed to move along each side portion of the upper frame facing each other.

      The roller connecting shaft connects the respective upper rollers across the inside of the upper frame,

      The leg member includes a first leg and a second leg that is pivotally connected to and intersects with the first leg,

      The lower end of the first leg is rotatably connected to one end of the lower frame, the upper end of the first leg is connected to the roller connecting shaft,

      The upper end of the second leg is rotatably connected to one end of the upper frame, the lower end of the second leg is arranged to be movable along the lower frame when the upper frame is elevated,

      One end of the operating member is connected to the roller connecting shaft, the other end of the operating member is connected to the second leg, the lifting device for a lift table.

   3. The method of claim 1,

      Fixing grooves are formed in the roller connecting shaft,

And a fixing means is coupled to the fixing groove so that one end of the operating member is connected to the roller connecting shaft.

4. The method of claim 3, wherein

The fixing grooves are respectively formed on both sides of the portion where one end of the operation member is connected, the lifting device for the lift table, characterized in that the fixing means are respectively coupled to each of the fixing grooves.

5. The method of claim 3, wherein

Lifting device for a lift table, characterized in that the fixing means is a C-type fixing ring.

6. The method of claim 4, wherein

Lifting device for a lift table, characterized in that the fixing means is a C-type fixing ring.

7. The method of claim 1,

A pair of lower rollers moved along the lower frame among the rollers connected by the roller connecting shaft are installed to move along each side portion of the lower frame facing each other.

The roller connecting shaft connects the respective lower rollers across the lower frame,

The leg member includes a first leg and a second leg that is pivotally connected to and intersects with the first leg,

The lower end of the first leg is rotatably connected to one end of the lower frame, the upper end of the first leg is arranged to be movable along the upper frame when the upper frame is elevated,

The upper end of the second leg is rotatably connected to one end of the upper frame, the lower end of the second leg is connected to the roller connecting shaft,

One end of the operation member is connected to the roller connecting shaft, the other end of the operation member is lift device for a lift table, characterized in that connected to the first leg.

8. The method of claim 2,

The lifting device for the lift table is

One end of the actuating member such that one end of the actuating member is connected to a portion spaced apart in the direction of either the upper frame or the lower frame from a centerline of the first leg or the second leg. And an elevating force adjusting member interposed between the first leg or the second leg and connecting one end portion of the actuating member to the first leg or the second leg. Device.

9. The method of claim 6,

The lifting device for the lift table is

One end of the actuating member such that one end of the actuating member is connected to a portion spaced apart in the direction of either the upper frame or the lower frame from a centerline of the first leg or the second leg. And an elevating force adjusting member interposed between the first leg or the second leg and connecting one end portion of the actuating member to the first leg or the second leg. Device.

10. The method of claim 7, wherein

The lifting force adjusting member

Lifting device for a lift table, characterized in that protruding a predetermined length from the first leg or the second leg, the one end of the operating member is rotatably connected to the distal end.

11. The method of claim 1,

And said actuating member is at least one of a gas spring and a hydraulic cylinder.

12. A lower frame placed on the installation surface;

An upper frame that can be elevated relative to the lower frame;

A leg member connected between the lower frame and the upper frame so that a relative height of the upper frame relative to the lower frame can be changed; And

And an auxiliary device mounting member capable of detachably connecting an auxiliary device to the upper frame.

13. The method of claim 12,

The upper frame

A pair of upper side bodies disposed parallel to each other,

An upper front connecting body connecting the front of each upper side body with each other,

An upper rear connecting body connecting the rear of each upper side body to each other,

Lifting device for a lift table, characterized in that the upper rear connecting body is the auxiliary device mounting member.

14. The method of claim 13,

Lifting device for the lift table, characterized in that the auxiliary device mounting member is formed in the upper detachable groove recessed to a predetermined depth for the connection of the auxiliary device.

15. The method of claim 14,

The lifting device for the lift table is

And an auxiliary device connecting member for connecting the auxiliary device mounting member and the auxiliary device.

The auxiliary device connecting member

An auxiliary device connection detachable tong member capable of detachably attaching the upper detachable groove;

And an auxiliary connecting body extending from the auxiliary device connection detachable tong member and connected to the auxiliary device.

16. The method of claim 15,

A plurality of upper detachable grooves are formed on the auxiliary device mounting member so as to be spaced apart from each other along a circumferential surface,

The auxiliary device connection detachable tong member is

Detachable tongs lower body that can be inserted into the front portion of one of the plurality of upper detachable grooves,

A detachable tong upper body coupled to the detachable tong lower body at an upper side of the detachable tong lower body, the front part of which can be inserted into another one of the plurality of upper detachable recesses;

And a detachable forceps coupling means for detachably coupling the detachable forceps lower body and the detachable forceps upper body to each other.

17. The method of claim 16,

Lifting device for a lift table, characterized in that the auxiliary table is mounted on the auxiliary connecting body.

18. The method of claim 17,

When the auxiliary connecting body is erected perpendicularly to each of the upper side bodies, the auxiliary table is erected perpendicularly to the table panel,

And the auxiliary table is placed on an extension line of the table panel when the auxiliary connecting body is laid parallel to each of the upper side bodies.

19. The method of claim 14,

Lifting device for a lift table, characterized in that the upper detachable groove is formed long in a predetermined length along the longitudinal direction of the auxiliary device mounting member so that the auxiliary device can be connected to any position of the auxiliary device mounting member.

20. For fixing the lift table to other objects,

A lower frame placed on the installation surface;

An upper frame that can be elevated relative to the lower frame;

A leg member connected between the lower frame and the upper frame so that a relative height of the upper frame relative to the lower frame can be changed; And

And a fixing member for fixing the lift table to the other object.

21. The method of claim 20,

The lower frame

A pair of lower side bodies disposed parallel to each other,

A lower front connecting member connecting the front of each lower side body to each other,

A lower rear connecting body connecting the rear of each lower side body to each other,

Lifting device for a lift table, characterized in that the lower rear connecting member is the fixing member.

22. The method of claim 21,

Lifting device for a lift table, characterized in that the fixing member is formed with a lower detachable groove recessed to a certain depth for connection of the other object.

23. The method of claim 22,

The lifting device for the lift table is

And a fixed connection member for connecting the fixed member and the other object.

The fixed connection member

A fixed detachable tong member for detachably picking up the lower detachable groove;

And a fixed connecting body extending from the fixed detachable tong member and coupled to a predetermined portion of the other object.

24. The method of claim 23,

A plurality of lower detachable grooves are formed to be spaced apart from each other along the circumferential surface on the fixing member,

The fixing detachable tong member is

A fixed detachable tong lower body capable of inserting a front portion into one of a plurality of lower detachable recesses;

A fixed detachable tongs upper body coupled to the fixed detachable tongs lower body at an upper side of the fixed detachable tongs lower body, the front part of which can be inserted into another one of the plurality of lower detachable recesses;

Lifting device for a lift table comprising a fixed detachable tongs coupling means for detachably coupling the fixed detachable tongs lower body and the fixed detachable tongs upper body.

25. A lower frame placed on the installation surface;

An upper frame that can be elevated relative to the lower frame;

A leg member connected between the lower frame and the upper frame so that a relative height of the upper frame relative to the lower frame can be changed;

An auxiliary device mounting member capable of detachably connecting an auxiliary device to the upper frame; And

And a fixing member for fixing the lift table to another object.

Description

Lifting device for lift table

The present invention relates to a lifting device for a lift table.

The lift table is disposed on an industrial site or a school, and the user can work, learn, and the like on a flat table panel installed at the upper side thereof, and the height of the table panel can be adjusted.

As described above, the structure for adjusting the height of the table panel in the lift table is a lifting device for the lift table.

In detail, a lift table generally includes two pairs of lower frames placed on an installation surface thereof, an upper frame on which the table panel is placed, and two ends each connected to the lower frame and the upper frame, the ends being connected to each other. Includes legs

Gas cylinders or hydraulic cylinders are used as the operating member to allow the lift table of this structure to be raised and lowered smoothly with less external force. Each end of the operating member has one of the upper frame and the lower frame and one of the legs. It is made of a structure that connects one or a pair of legs to each other.

As an example of such a lift table, Patent Publication No. 10-2016-0100175 (name of the invention: desk capable of height adjustment), Patent No. 10-1575195 (name of the invention: table lift) and the like can be presented.

However, according to the conventional lifting table lift apparatus, each end of the operating member is configured to connect one of the legs and one of the upper frame and the lower frame, or to connect a pair of legs to each other, Each end must be connected to a frame or leg, respectively, and therefore, each end of the actuating member and a structure for connecting to the frame or leg must be applied to each end of the actuating member respectively, so that there are many additional structures for such a connection. As a result, the manufacturing cost of the lift table increases, and the increase in the number of parts causes frequent failures.

In addition, according to the conventional structure for attaching the auxiliary device for the lift table, when additional attachment to the auxiliary device such as the auxiliary table and the work order plate is required in addition to the table panel, a structure for additional attachment to the auxiliary device is not provided separately. Not only is it difficult to further attach to such an auxiliary device, but there is also a disadvantage that an integral additional attachment is not possible by using a separate fixing means.

In addition, according to a conventional lift table lift apparatus, the lift table is applied to other objects, for example, Patent Application Publication No. 10-2016-0111905 (invention: industrial shelf forming rack system and the industrial shelf forming rack system is applied to if there is no means to fix the lift table to other objects, it is necessary to fasten it with a screw, etc., so that both the lift table and other objects may be damaged, and it may be repeatedly removed. There is a disadvantage that no coupling can be made.

An object of the present invention is to provide a lifting device for a lift table having a concise structure in which a structure for connecting an operation member such as a gas spring and a hydraulic cylinder is minimized.

Another object of the present invention is to provide a lift table lift apparatus capable of integrally attaching an auxiliary device to a lift table.

Still another object of the present invention is to provide a lift table lift apparatus capable of detachably fixing a lift table to another object.

Lifting apparatus for a lift table according to an aspect of the present invention includes a lower frame placed on the installation surface; An upper frame that can be elevated relative to the lower frame; A leg member connected between the lower frame and the upper frame so that a relative height of the upper frame relative to the lower frame can be changed; A roller member connected to the leg member, the roller member being movable along at least one of the upper frame and the lower frame when the upper frame moves up and down according to the rotation of the leg member; A roller connecting shaft which moves along the same frame of the upper frame and the lower frame and connects pairs of rollers constituting the roller member; And a lower end of the upper frame, the one end of which is connected to the roller connecting shaft, the other end of which is different from the leg to which the roller connecting shaft is connected, among the plurality of legs constituting the leg member. It includes an operating member connected to.

According to another aspect of the present invention, a lift apparatus for a lift lift table includes a lower frame placed on an installation surface; An upper frame that can be elevated relative to the lower frame; A leg member connected between the lower frame and the upper frame so that a relative height of the upper frame relative to the lower frame can be changed; And an auxiliary device mounting member capable of detachably connecting the auxiliary device to the upper frame.

Lifting device for a lift table according to another aspect of the present invention is for fixing the lift table to other objects,

A lower frame placed on the installation surface; An upper frame which can be lifted and lowered relative to the lower frame and on which a table panel is disposed; A leg member connected between the lower frame and the upper frame so that a relative height of the upper frame relative to the lower frame can be changed; And a fixing member extending from at least one of the upper frame and the lower frame so that the lift table is fixed to the other object and coupled to the other object.

Lifting apparatus for a lift table according to another aspect of the present invention includes a lower frame placed on the installation surface; An upper frame that can be elevated relative to the lower frame; A leg member connected between the lower frame and the upper frame so that a relative height of the upper frame relative to the

lower frame can be changed; An auxiliary device mounting member capable of detachably connecting an auxiliary device to the upper frame; And a fixing member for fixing the lift table to another object.

According to an elevating device for a lift table according to an aspect of the present invention, the elevating device for a lift table includes a lower frame, an upper frame, a leg member, a roller member, a roller connecting shaft, and an operating member, and one end of the operating member is connected to the roller connecting shaft, and the other end of the actuating member is connected to a leg different from the leg to which the roller connecting shaft is connected, among a plurality of legs constituting the leg member, Since one end of the actuating member can be connected to the roller linking shaft, which must be essentially present for the connection, a structure for linking one end of the actuating member can be replaced by the roller linking shaft, and accordingly The structure for the connection of the operating member can be made a simple structure with a minimum it works.

According to another aspect of the present invention, there is provided an auxiliary device attachment structure for a lift table, wherein the auxiliary device attachment structure for the lift table, together with the lower frame, the upper frame, and the leg member, can be detachably connected to the upper frame. By including the device connecting member, it is possible to integrally attach auxiliary devices such as auxiliary tables, work orders, etc. to the lift table, to easily attach and remove such auxiliary devices, and to raise the attached auxiliary devices, There is an effect that can be easily used by switching to lay down for various purposes.

According to a lifting device for a lift table according to another aspect of the present invention, the lifting device for a lift table, together with the lower frame, the upper frame and the leg member, so that the lift table is fixed to another object, among the upper frame and the lower frame. Extending from at least one, comprising a fixing member coupled to the other object, by detachably coupling the fixing member to the other object, it is possible to easily and easily detachable to the lift table to the other object it is effective.

1 is a perspective view showing a state in which the lift device for a lift table according to the first embodiment of the present invention is coupled.

Figure 2 is a perspective view showing a state that the table panel is separated in the lifting device for a lift table according to a first embodiment of the present invention.

3 is a perspective view showing a state in which the lift device for a lift table according to the first embodiment of the present invention is separated.

4 is a front view of the elevating device for the lift table according to the first embodiment of the present invention.

5 is a front view of a state in which a lift device for a lift table according to a first embodiment of the present invention is contracted;

FIG. 6 is an enlarged view of a portion A shown in FIG. 2; FIG.

FIG. 7 is an exploded view of the part shown in FIG. 6;

8 is a front view of the elevating device for the lift table according to the second embodiment of the present invention.

Figure 9 is a perspective view showing a state in which the lift table is applied to the lifting device for a lift table according to a third embodiment of the present invention.

10 is a perspective view of the table panel separated from the front side as viewed obliquely from above on the lift table to which the lift table lift apparatus according to the third embodiment of the present invention is applied;

11 is a perspective view showing a state in which a lift table to which a lift table lift apparatus according to a third embodiment of the present invention is applied is separated;

12 is a front view of a lift table to which a lift device for a lift table according to a third embodiment of the present invention is applied;

13 is a front view showing a state in which a lift table to which a lift device for a lift table according to a third embodiment of the present invention is applied is contracted;

FIG. 14 is an enlarged view of a portion B shown in FIG. 10; FIG.

FIG. 15 is an exploded view of the part shown in FIG. 14;

FIG. 16 is an enlarged view of a portion C shown in FIG. 11; FIG.

17 is a front view showing a state in which an auxiliary table is laid down in a lift table to which a lift table lift apparatus according to a third embodiment of the present invention is applied;

18 is a perspective view of the table panel separated from the rear side as viewed obliquely from a lift table to which a lift table lift apparatus according to a third embodiment of the present invention is applied;

FIG. 19 is an enlarged view of a portion D shown in FIG. 18; FIG.

20 is a front view of a lift table to which a lift device for a lift table according to a fourth embodiment of the present invention is applied;

Hereinafter, a lift apparatus for a lift table according to embodiments of the present invention will be described with reference to the drawings.

1 is a perspective view showing a state in which a lift device for a lift table according to a first embodiment of the present invention is coupled, Figure 2 is a state in which the table panel is separated in a lift device for a lift table according to a first embodiment of the present invention 3 is a perspective view showing a state in which the lift table lift apparatus according to the first embodiment of the present invention is separated, and FIG. 4 is a front view of the lift table lift apparatus according to the first embodiment of the present invention. 5 is a front view showing a state in which the lift device for a lift table according to the first embodiment of the present invention is contracted, and FIG. 6 is an enlarged view of a portion A shown in FIG. 7 is an exploded view of the part shown in FIG.

1 to 7 together, the lift device 100 for a lift table according to the present embodiment is the lower frame 110, the upper frame 130, the leg member 150, the roller member 156, 158, roller connecting shafts 155, 157, and actuation members 160, 165.

The lower frame 110 forms a lower structure of the elevating device 100 for the lift table, and is placed to directly contact an installation surface on which the elevating device 100 for the lift table is installed.

In detail, the lower frame 110 includes a pair of lower side bodies 111 and 115 disposed in parallel with each other, and a lower front connector 120 connecting the front portions of the lower side bodies 111 and 115 to each other. And a lower rear connecting member 125 connecting the rear parts of the lower side bodies 111 and 115 to each other, the inside of which has a rectangular shape.

In front of each of the lower side bodies 111 and 115, first leg connecting portions 112 and 116 are formed to be connected to allow the lower portion of the first leg 151 to be described later to rotate in a predetermined angle range. Lower roller moving holes 113 and 117 that can be moved while the lower roller 158 connected to the lower portion of the second leg 152, which will be described later, on the surfaces facing each other of the lower side bodies 111 and 115, respectively. Is formed.

The upper frame 130 forms an upper structure of the elevating device 100 for the lift table, may be elevated relative to the lower frame 110, and is wide in a predetermined area on an upper end of the upper frame 130. The table panel 101 in the form of a plate is disposed.

In detail, the upper frame 130 includes a pair of upper side bodies 131 and 135 disposed in parallel with each other, and an upper front connecting body 140 connecting front portions of the upper side bodies 131 and 135 to each other. And an upper rear connecting member 145 connecting the rear portions of the upper side bodies 131 and 135 to each other, the inside of which has a rectangular shape.

The front portion of each of the upper side body (131, 135) is formed with a second leg connecting portion (132, 136) is connected so that the upper portion of the second leg 152 is rotated in a predetermined angle range, The upper roller moving holes 133 and 137 may be formed on the surfaces of the upper side bodies 131 and 135 facing each other so that the upper roller 156 connected to the upper portion of the first leg 151 may be rotated, respectively. do.

The leg member 150 is connected between the lower frame 110 and the upper frame 130, so that the relative height of the upper frame 130 relative to the lower frame 110 can be changed.

In detail, the leg member 150 is formed in the form of a bar of a predetermined length bar, and formed in the form of a bar of a predetermined length and is intersected with the first leg 151 is rotated in a predetermined angle range The second leg 152 is pivotally connected.

The first leg 151 and the second leg 152 may be formed so as to cross at an arbitrary position, for example, each center portion of the leg pivot shaft 153 as a whole and cross in an 'X' shape. have.

When the lower portion of the first leg 151 and the upper portion of the second leg 152 is closer, and the upper portion of the first leg 151 and the lower portion of the second leg 152 is rotated closer, the leg member The height of the 150 is lowered, so that the upper frame 130 is lowered toward the lower frame 110.

On the other hand, when the lower portion of the first leg 151 and the upper portion of the second leg 152 is far away and the upper portion of the first leg 151 and the lower portion of the second leg 152 is rotated apart, The height of the leg member 150 is increased, so that the upper frame 130 is raised from the lower frame 110 side.

One leg member 150 is installed at each of both sides of the lower frame 110 and the upper frame 130.

The roller members 156 and 158 are connected to the leg members 150 and, as the leg members 150 rotate, the upper frame 130 and the lower frame when the upper frame 130 is elevated. It may be moved along at least one of the (110).

In detail, the roller members 156 and 158 are rotatably connected to the lower portion of the second leg 152 and the lower roller 158 which can be moved along the lower roller moving holes 113 and 117. And an upper roller 156 rotatably connected to an upper portion of the first leg 151 and movable along the upper roller moving holes 133 and 137.

The lower roller 158 and the upper roller 156 are each configured as a pair, and are connected to each of the first leg 151 and each of the second leg 152 one by one.

The roller connecting shafts 155 and 157 connect a pair of rollers moved along the same frame among the upper frame 130 and the lower frame 110. That is, the upper one of the roller connecting shafts 155 and 157 155 connects the pair of upper rollers 156 to each other across the inside of the upper frame 130, and the roller connecting shaft (The lower one of the 155 and 157 157 connects the pair of lower rollers 158 to each other across the lower frame 110.

The lower end of the first leg 151 is rotatably connected to the first leg connecting portions 112 and 116, which are one end of the lower frame 110, and the upper end of the first leg 151 is the upper portion. The upper and lower ends of the first leg 151 are disposed to be movable along the upper roller moving holes 133 and 137 when the frame 130 is elevated, and is disposed above the roller connecting shafts 155 and 157. It is connected to the 155, the upper end of the second leg 152 is rotatably connected to the second leg connecting portion 132, 136, which is one end of the upper frame 130, the second leg The lower end of 152 is disposed to be movable along the lower roller moving holes 113 and 117 when the upper frame 130 is lifted, and the lower end of the second leg 152 is connected to the roller connecting shaft (155 and 157 are connected to the lower one (157).

The upper ends of the pair of first legs 151 and the lower ends of the pair of second legs 152 are connected to each other by the roller connecting shafts 155 and 157, respectively. A pair of the upper roller 156 and a pair of the lower roller 158 are respectively connected to each end of the 157, so that the first leg 151 and the second leg 152 can be smoothly moved. In addition, each of the leg members 150 installed on both sides of the lower frame 110 and the upper frame 130 may be operated in conjunction with each other, so that the lifting of the upper frame 130 is more smoothly. Can be done.

The actuating members 160 and 165 are operated to smoothly raise and lower the upper frame 130, and one end of the actuating members 160 and 165 is connected to one of the roller connecting shafts 155 and 157. The other end portion of the operation members 160 and 165 is connected to a leg different from a leg to which the roller connecting shafts 155 and 157 are connected, among a plurality of legs constituting the leg member 150.

The actuating members 160, 165 comprise at least one of a gas spring and a hydraulic cylinder.

In the present embodiment, the upper portion of the operating member (160, 165) is arranged on the upper side of the roller connecting shaft (155, 157), that is, the upper end of the first leg (151) connected to each other Rotatably connected, and a lower portion of the actuating members 160 and 165 is rotatably connected to the second leg 152 below the point where the first leg 151 and the second leg 152 intersect. Connected. For example, when the actuating members 160, 165 are hydraulic cylinders, the cylinder body is connected to the upper one of the roller connecting shafts 155, 157, 155, and the piston is the leg member 150. Can be rotatably connected to the second leg 152.

A fixing groove 155a is formed in an upper portion 155 of the roller connecting shafts 155 and 157, and an upper portion of the actuating members 160 and 165 is upper of the roller connecting shafts 155 and 157. The fixing means 155b is coupled to the fixing groove 155a so that the state connected to the one disposed in the holding unit 155a is maintained.

The fixing grooves 155a are formed at both sides of portions at which one end portions of the operation members 160 and 165 are connected, and the fixing means 155b are coupled to the fixing grooves 155a, respectively.

The fixing means 155b may be presented as a C-shaped fixing ring.

Although the description of the fixing groove 155a and the fixing means 155b is not shown, the same applies to the lower one of the roller connecting shafts 155 and 157.

As described above, the upper portions of the operating members 160 and 165 are connected to the upper ones of the roller connecting shafts 155 and 157 and the upper both sides of the operating members 160 and 165. The fixing means 155b is coupled to each of the formed fixing grooves 155a, so that the upper portion of the operating members 160 and 165 are rotatably connected to the roller connecting shafts 155 and 157, respectively. The left and right flows in which the upper portions of the operation members 160 and 165 move on the shafts 155 and 157 are not generated.

On the other hand, in the present embodiment, the lifting device 100 for lift tables includes lifting force adjusting members 161 and 166.

The lifting force adjusting members 161 and 166 may have any one of the upper frame 130 and the lower frame 110 from one end of the operating member 160 or 165 from the center line of the second leg 152. A lower portion of the actuating members 160 and 165 and a lower portion of the actuating members 160 and 165 and the second leg so as to be connected to an offset portion in the direction of To connect 152.

In detail, the lifting force adjusting members 161 and 166 protrude a predetermined length from the second leg 152, and the lower portions of the operating members 160 and 165 are disposed at the distal ends of the lifting force adjusting members 161 and 166. It is connected rotatably.

The lifting force adjusting members 161 and 166 protrude a predetermined length vertically from the centerline of the second leg 152, and the operating members 160 and 165 at the distal ends of the lifting force adjusting members 161 and 166. As the lower portion of the second member rotably connects, the lower portion of the operating members 160 and 165 may be connected to a portion spaced apart from the centerline of the second leg 152, and thus the first leg 151 and the first portion. Even when the two legs 152 are folded in close proximity, the lifting force of the operation members 160 and 165 may be reduced.

Reference numeral 105 is a fixing lever, when the user grabs the fixing lever 105 by hand, the fixing of the lifting device 100 for the lift table may be released to be in a liftable state, and the fixing lever 105 When it is released, the lifting device 100 for the lift table is fixed again. Since the specific structure of the fixing lever 105 is outside the scope of the present invention and general, the detailed illustration and description thereof will be omitted here.

Hereinafter, with reference to the drawings will be described the operation of the lifting device 100 for a lift table according to this embodiment.

First, when the user grasps the fixing lever 105 and grips with his hand to release the lifting device 100 for lifting, the user presses the lifting device 100 for lifting. The lower roller 158 and the upper roller 156 are rearwards of the lower frame 110 and the upper frame 130 so that both ends of the leg 151 and the second leg 152 are close to each other. Is moved. Then, the height of the leg member 150 is gradually lowered, and the upper frame 130 is lowered accordingly.

On the other hand, when the user lifts the lifting device 100 for the lift table, the lower roller 158 and the upper roller (the two ends of the first leg 151 and the second leg 152 are far from each other) 156 is moved to the front of the lower frame 110 and the upper frame 130, respectively. Then, the height of the leg member 150 is gradually increased, thereby raising the upper frame 130.

The upper frame 130 may be smoothly lifted and lowered by the operation members 160 and 165 during the lifting of the upper frame 130.

As described above, the lifting device 100 for the lift table includes the lower frame 110, the upper frame 130, the leg members 150, the roller members 156 and 158, and the roller connecting shaft 155, 157 and the actuating members 160 and 165, one end of the actuating members 160 and 165 is connected to the roller connecting shafts 155 and 157, and the actuating members 160 and 165. The other end of the connection is connected to the other leg and the leg connected to the roller connecting shaft 155, 157 of the plurality of legs constituting the leg member 150, the connection of the roller in the lifting device 100 for the lift table One end of the operating member (160, 165) can be connected to the roller connecting shaft (155, 157) that must be essentially present for the connection of the one end of the operating member (160, 165) A structure can be replaced by the roller connecting shafts 155, 157, accordingly Therefore, a simple structure in which the structure for connecting the operation members 160 and 165 is minimized can be achieved.

Hereinafter, a lift apparatus for a lift table according to other embodiments of the present invention will be described with reference to the drawings. In carrying out this description, the description overlapping with the contents already described in the above-described first embodiment of the present invention will be replaced with, and will be omitted herein.

8 is a front view of the elevating device for the lift table according to the second embodiment of the present invention.

Referring to FIG. 8, in this embodiment, a pair of lower rollers 258 moved along the lower frame 210 among the rollers connected by the roller connecting shafts 255 and 257 are mutually out of the lower frames 210. It is installed to move along each side facing each other, the lower one of the roller connecting shafts (255, 257) 257 is connected to each of the lower rollers 258 across the lower frame (210) A lower portion of the actuating members 260, 265 is connected to the lower one of the roller connecting shafts 255, 257, and an upper portion of the actuating members 260, 265 is provided with a first leg 251. Is connected to.

In this embodiment, the lifting force adjusting member 266 protrudes a predetermined length from the first leg 251, and the upper portions of the operating members 260 and 265 are rotatable at the distal end of the lifting force adjusting member 266. is connected.

Hereinafter, a lift table lift apparatus according to a third embodiment of the present invention will be described with reference to the drawings.

9 is a perspective view showing a state in which a lift table to which a lift table lift apparatus according to a third embodiment of the present invention is coupled is coupled, and FIG. 10 is a lift to which a lift table lift apparatus according to a third embodiment of the present invention is applied. FIG. 11 is a perspective view of the table panel separated from the table at an oblique view from above, and FIG. 11 is a perspective view illustrating a lift table to which a lift table lift apparatus according to a third embodiment of the present invention is applied, and FIG. A front view of a lift table to which a lift table lift apparatus according to a third embodiment of the present invention is applied, and FIG. 13 is a view in which the lift table to which the lift table lift apparatus according to the third embodiment of the present invention is applied is contracted. Is a front view, FIG. 14 is an enlarged view of a portion B shown in FIG. 10, and FIG. 15 is shown in FIG. 16 is an enlarged view of a portion C shown in FIG. 11, and FIG. 17 is an auxiliary table in a lift table to which a lift table lift apparatus according to a third embodiment of the present invention is applied. FIG. 18 is a perspective view of the laid state from the front, and FIG. 18 is a perspective view of the table panel separated from the rear side of the lift table to which the lift table lift apparatus according to the third embodiment of the present invention is removed, and FIG. 19. 18 is an enlarged view of a portion D shown in FIG. 18.

9 to 19 together, the lift apparatus 300 for a lift table according to the present embodiment includes a lower frame 310, an upper frame 330, a leg member 350, and an auxiliary device mounting member. do.

In addition, the lifting device 300 for lifting the table is for fixing the lift table to another object, the lower frame 310, the upper frame 330, the leg member 350 and the fixing member include.

In addition, the lifting device 300 for the lift table includes roller members 356 and 358, roller connecting shafts 355 and 357, operating members 360 and 365, and auxiliary device connecting members 370. .

The lower frame 310 forms a lower structure of the elevating device 300 for the lift table, and is placed so as to directly contact an installation surface on which the elevating device 300 for the lift table is installed.

In detail, the lower frame 310 includes a pair of lower side bodies 311 and 315 disposed in parallel to each other, and a lower front connecting unit 320 connecting the front portions of the lower side bodies 311 and 315 to each other. And a lower rear connecting member 325 connecting the rear portions of the lower side bodies 311 and 315 to each other, the inside of which has a rectangular shape.

In front of each of the lower side bodies 311 and 315, first leg connecting parts 312 and 316 are formed to be connected so that the lower part of the first leg 351, which will be described later, is rotated in a predetermined angle range. Lower roller moving holes 313 and 317 that can be moved while the lower roller 358 connected to the lower portion of the second leg 352, which will be described later, on the surfaces facing each other of the lower side bodies 311 and 315, respectively, is formed.

The upper frame 330 may form an upper structure of the lifting device 300 for the lift table, and may be elevated relative to the lower frame 310, and may be wider in a predetermined area on an upper end of the upper frame 330. The table panel 301 in the form of a plate is disposed.

In detail, the upper frame 330 includes a pair of upper side bodies 331 and 335 disposed in parallel to each other, and an upper front connecting body 340 connecting the front portions of the upper side bodies 331 and 335 to each other. And an upper rear connecting member 345 which connects the rear parts of the upper side bodies 331 and 335 to each other, and has a rectangular shape inside.

The auxiliary device mounting member may detachably connect the auxiliary device to the upper frame 330. In this embodiment, the upper rear connecting member 345 becomes the auxiliary device mounting member, and thus the upper rear. A connector 345 detachably connects the auxiliary device to the upper frame 330.

In front of each of the upper side body (331, 335) is formed a second leg connecting portion (332, 336) is connected to enable the rotation of the upper portion of the second leg 352 in a certain angle range, The upper roller moving holes 333 and 337 may be formed on the surfaces of the upper side bodies 331 and 335 facing each other so that the upper roller 356 connected to the upper portion of the first leg 351 may be rotated, respectively. do.

The leg member 350 is connected between the lower frame 310 and the upper frame 330, so that the relative height of the upper frame 330 relative to the lower frame 310 can be changed.

In detail, the leg member 350 is formed in the shape of a bar of a predetermined length bar, and formed in the shape of a bar of a predetermined length and cross the first leg 351 is rotated in a predetermined angle range The second leg 352 is pivotally connected.

The first leg 351 and the second leg 352 may be formed at an arbitrary position, for example, each center portion is connected about the leg rotation axis 353 to intersect in an 'X' shape as a whole. have.

When the lower portion of the first leg 351 and the upper portion of the second leg 352 is closer, and the upper portion of the first leg 351 and the lower portion of the second leg 352 is rotated closer, the leg member The height of the 350 is lowered, so that the upper frame 330 is lowered toward the lower frame 310.

On the other hand, when the lower portion of the first leg 351 and the upper portion of the second leg 352 is far away and the upper portion of the first leg 351 and the lower portion of the second leg 352 is rotated away from the, The height of the leg member 350 is increased, so that the upper frame 330 is raised from the lower frame 310 side.

One leg member 350 is provided at each of both sides of the lower frame 310 and the upper frame 330.

The roller members 356 and 358 are connected to the leg members 350 and, as the leg members 350 rotate, the upper frame 330 and the lower frame when the upper frame 330 moves up and down. it can be moved along at least one of (310).

In detail, the roller members 356 and 358 may be rotatably connected to the lower portion of the second leg 352 and the lower roller 358 which may be moved along the lower roller moving holes 313 and 317. And an upper roller 356 rotatably connected to an upper portion of the first leg 351 and movable along the upper roller moving holes 333 and 337.

The lower roller 358 and the upper roller 356 are each composed of a pair, and are connected to each of the first leg 351 and each of the second leg 352, one by one.

The roller connecting shafts 355 and 357 connect pairs of rollers moved along the same frame among the upper frame 330 and the lower frame 310. That is, the upper one of the roller connecting shafts 355, 357 disposed 355 connects the pair of upper rollers 356 to each other across the upper frame 330, and the roller connecting shaft (The lower ones 357 of 355 and 357 connect the pair of lower rollers 358 to each other across the lower frame 310.

The lower end of the first leg 351 is rotatably connected to the first leg connecting portions 312 and 316, which are one end of the lower frame 310, and the upper end of the first leg 351 is the upper portion. When the frame 330 is raised and lowered, the upper roller moving holes 333 and 337 are disposed to be movable, and the upper end of the first leg 351 is disposed above the roller connecting shafts 355 and 357. It is connected to the 355, the upper end of the second leg 352 is rotatably connected to the second leg connecting portion (332, 336) which is one end of the upper frame 330, the second leg The lower end of the 352 is disposed to be movable along the lower roller moving holes 313 and 317 when the upper frame 330 is elevated, and the lower end of the second leg 352 is connected to the roller connecting shaft (355 and 357 are connected to the lower one disposed 357.

The upper ends of the pair of first legs 351 and the lower ends of the pair of second legs 352 are connected to each other by the roller connecting shafts 355 and 357, respectively. And a pair of the upper rollers 356 and a pair of the lower rollers 358 are respectively connected to respective ends of the 357 so that the first leg 351 and the second leg 352 can be smoothly moved. In addition, each of the leg members 350 installed on both sides of the lower frame 310 and the upper frame 330 may be operated in conjunction with each other, so that the lifting of the upper frame 330 is smoother. Can be done.

The actuating members 360 and 365 are operated to smoothly raise and lower the upper frame 330, and one end of the actuating members 360 and 365 is connected to one of the roller connecting shafts 355 and 357. The other end of the operating member 360 or 365 is connected to a leg different from the leg to which the roller connecting shafts 355 and 357 are connected, among a plurality of legs constituting the leg member 350.

The actuating members 360 and 365 are made of at least one of a gas cylinder and a hydraulic cylinder.

In this embodiment, the upper portion of the operating member (360, 365) is arranged on the upper side of the roller connecting shaft (355, 357) 355, that is, the upper end of the first leg (351) connected to each other Rotatably connected, and a lower portion of the actuating members 360 and 365 is rotatable to the second leg 352 at a lower side of the point where the first leg 351 and the second leg 352 intersect. Connected. For example, when the actuating members 360 and 365 are hydraulic cylinders, the cylinder body is connected to the upper one of the roller connecting shafts 355 and 357 355, and the piston is the leg member 350. It may be rotatably connected to the second leg 352 of the).

Fixing grooves 355a are formed in an upper portion 355 of the roller connecting shafts 355 and 357, and an upper portion of the operating members 360 and 365 is an upper side of the roller connecting shafts 355 and 357. The fixing means 355b is coupled to the fixing groove 355a so that the state connected to the one disposed in the holder 355 is maintained.

The fixing grooves 355a are respectively formed at both sides of portions at which one end portions of the operation members 360 and 365 are connected, and the fixing means 355b are coupled to the fixing grooves 355a, respectively.

The fastening means 355b may be presented as a C-shaped fastening ring.

Although the description of the fixing groove 355a and the fixing means 355b is not shown, the same applies to the lower one of the roller connecting shafts 355 and 357 357.

As described above, an upper portion of the operating members 360 and 365 is connected to an upper portion 355 of the roller connecting shafts 355 and 357, and both upper sides of the operating members 360 and 365 are connected. The fixing means 355b is coupled to the formed fixing grooves 355a, respectively, so that the upper portion of the operating members 360 and 365 is rotatably connected to the roller connecting shafts 355 and 357. The left and right flows in which the upper portions of the operating members 360 and 365 move on the shafts 355 and 357 are not generated.

On the other hand, in this embodiment, the lifting device 300 for lift tables includes lifting force adjusting members 361 and 366.

The lifting force adjusting members 361 and 366 have one end portion of the operating members 360 and 365 from one of the upper frame 330 and the lower frame 310 from a centerline of the second leg 352. A lower portion of the actuating members 360, 365 and the lower leg of the actuating members 360, 365 and the second leg so as to be connected to an offset portion in the direction of 352 is to connect.

In detail, the lifting force adjusting members 361 and 366 protrude a predetermined length from the second leg 352, and the lower portions of the operating members 360 and 365 are disposed at the distal ends of the lifting force adjusting members 361 and 366. It is connected rotatably.

The lifting force adjusting members 361 and 366 protrude a predetermined length vertically from the centerline of the second leg 352, and the operating members 360 and 365 at distal ends of the lifting force adjusting members 361 and 366. As the lower portion of the second member rotably connects, the lower portion of the operating members 360 and 365 may be connected to a portion spaced apart from the centerline of the second leg 352, and thus the first leg 351 and the first portion may be connected to each other. Even when the two legs 352 are folded in close proximity, the lifting force of the operating members 360 and 365 may be reduced.

Reference numeral 305 denotes a fixed lever. When the user grasps the fixed lever 305 by hand, the fixing of the lifting device 300 for the lift table may be released, and the lifting lever 305 may be lifted. When it is released, the lifting device 300 for the lift table is fixed again. Since the specific structure of the fixing lever 305 is outside the scope of the present invention and general, the detailed illustration and description thereof will be omitted here.

Hereinafter, an auxiliary table 377 is provided as the auxiliary device, but is not limited thereto, and various other structures such as a work instruction board may be presented as the auxiliary device.

In the present embodiment, the upper detachable groove 345a recessed to a certain depth is formed in the upper rear connecting member 345 which is the auxiliary device mounting member for the connection of the auxiliary device connecting member 370.

The upper detachable groove 345a may be formed in plural so as to be spaced apart from each other along a circumferential surface on the auxiliary device mounting member, and the auxiliary device connecting member 370 may be formed at an arbitrary position of the upper rear connecting member 345. The upper detachable groove 345a may be formed to have a predetermined length along the length direction of the upper rear connecting member 345 so that the upper and lower detachable grooves 345a may be connected to each other.

Preferably, the upper detachable groove 345a may be formed in the entire upper rear connector 345 in the longitudinal direction of the upper rear connector 345.

The auxiliary device connecting member 370 is for connecting the auxiliary device mounting member and the auxiliary device.

The auxiliary device connecting member 370 is an auxiliary device connecting detachable tong member 371 that can detachably pick up the upper detachable groove 345a from the rear of the upper rear connecting member 345, and the auxiliary device connecting detachable An auxiliary connector 375 extends rearward from the tong member 371 and is mounted on and connected to the auxiliary table 377.

The auxiliary device connection detachable forceps member 371 includes a detachable forceps lower body 372, a detachable forceps upper body 373, and detachable forceps coupling means 374.

The detachable tong lower body 372 may have a front portion inserted into one of the plurality of upper detachable grooves 345a.

The detachable tongs upper body 373 is coupled to the detachable tongs lower body 372 from the upper side of the detachable tongs lower body 372, and the front part of the detachable tongs upper body 345a may be inserted into another one of the plurality of upper and detachable recesses 345a. .

The detachable tongs lower body 372 and the detachable tongs upper body 373 are respectively coupled to different upper detachable grooves 345a, and the extension lines of the front and rear ends of the detachable tongs lower body 372 and the detachable tongs upper body 373 are By being coupled so as to converge with each other, the detachable tongs lower body 372 and the detachable tongs upper body 373 can firmly pick up the upper rear connector 345.

The detachable forceps coupling means 374 is to detachably couple the detachable forceps lower body 372 and the detachable forceps upper body 373 to each other. The detachable forceps lower body 372 is configured of a hexagon wrench bolt and a nut, and the like.) And the detachable tongs upper body 373 may be tightened to be fixed to each other, or the detachable tongs lower body 372 and the detachable tongs upper body 373 may be separated from each other.

The auxiliary connecting member 375 extends from the detachable tong coupling means 374, and forms a vertically bent shape, and the auxiliary table 377 is mounted on and fixed to the rear upper end of the auxiliary connecting member 375. Support 376 is formed. Then, as shown in FIG. 1, the auxiliary table 377 is vertically erected to the rear of the table panel 301, and thus may be used for a work instruction board or the like.

On the other hand, the upper rear connecting member 345 is rotatably connected to the rear of each upper side body (331, 335) to be rotated within a predetermined angle range. Then, when the auxiliary connecting body 375 is erected perpendicularly to each of the upper side bodies 331 and 335, the auxiliary table 377 is perpendicular to the table panel 301 as shown in FIG. 1 and the like. It can be used for the purpose of the operation indicator board, etc., the auxiliary connector 375 is rotated about 90 degrees, so that the upper rear connector 345 is each upper side body (331, 335) When laid parallel to, the auxiliary table 377 is placed on an extension of the table panel 301, as shown in FIG. 9, so that the auxiliary table 377 is positioned on the table panel 301. It can be used to expand the table area.

The fixing member allows the lift table to be fixed to the other object. In this embodiment, the lower rear connecting member 325 becomes the fixing member, and thus the lower rear connecting member 325 becomes the lift table. Removably fixed to the other object.

The fixing member is provided with a lower detachable groove 325a recessed to a predetermined depth for connection of the fixing member.

In the present embodiment, for example, the auxiliary device mounting member constitutes the upper frame 330, and the fixing member constitutes the lower frame 310.

The lower detachable groove 325a may be formed in plural to be spaced apart from each other on the lower rear connecting member 325 which is the fixing member, and the other object may be connected to an arbitrary position of the lower rear connecting member 325. The lower detachable groove 325a may be formed to have a predetermined length along the longitudinal direction of the lower rear connecting member 325.

Preferably, the lower detachable groove 325a may be formed in the entire fixing member in the longitudinal direction of the fixing member.

The elevating device 300 for the lift table further includes a fixed connection member 380 for connecting the fixed member and the other object.

The fixed connection member 380 includes a fixed detachable tong member 381 that can detachably detach the lower detachable groove 325a from the rear of the lower rear connector 325, and the fixed detachable tong member 381. A fixed connector 385 extends from and coupled to a portion of the other object.

The fixed detachable forceps member 381 includes a fixed detachable forceps lower body 382, a fixed detachable forceps upper body 383, and a fixed detachable forceps coupling unit 384.

The fixed detachable tong lower body 382 may have a front portion inserted into one of the plurality of lower detachable recesses 325a.

The fixed detachable tongs upper body 383 is coupled to the fixed detachable forceps lower body 382 at an upper side of the fixed detachable forceps lower body 382, and the front portion of the lower detachable tongs 325a is inserted into another one of the plurality of lower detachable forceps 325a. It can be.

The fixed detachable tongs lower body 382 and the fixed detachable tongs upper body 383 are respectively coupled to different lower detachable grooves 325a, and each of the fixed detachable tongs lower body 382 and the fixed detachable tongs upper body 383 The extension lines of the front part are coupled to converge with each other, so that the fixed detachable tongs lower body 382 and the fixed detachable tongs upper body 383 can firmly pick up the lower rear connecting member 325.

The fixed detachable tongs coupling means 384 couples the fixed detachable tongs lower body 382 and the fixed detachable tongs upper body 383 to each other in a detachable manner, and is composed of a hexagon wrench bolt and a nut, and the like. Tweezer lower body 382 and the fixed detachable tongs upper body 383 may be tightened to be fixed to each other, or the fixed detachable forceps lower body 382 and the fixed detachable tongs upper body 383 may be loosened to be separated from each other.

The fixed connection member 380 may be detachably connected to the plurality of removable connection members so as to be spaced apart from each other on the lower rear connection member 325 which is the fixing member, and each fixed connection member 385 is connected to the lower rear connection member 325. It may be made in the form of a predetermined length protruding to the rear.

Each of the fixed connection body 385 formed as described above is inserted or tightened in a portion of the other object, such that the lift table can be easily and detachably fixed to the other object.

Hereinafter, with reference to the drawings will be described the operation of the lifting device 300 for a lift table according to this embodiment.

First, when the user holds the fixing lever 305 and grips with his hand and the fixing device 300 for lifting device 300 is released, when the user presses the device 300 for lifting device 300, the first lifting device 300 is pressed. The lower roller 358 and the upper roller 356 are rearwards of the lower frame 310 and the upper frame 330 so that both ends of the leg 351 and the second leg 352 are close to each other. is moved. Then, the height of the leg member 350 is gradually lowered, and the upper frame 330 is lowered accordingly.

On the other hand, when the user lifts the lift device 300 for the lift table, the lower roller 358 and the upper roller (the two ends of the first leg 351 and the second leg 352 away from each other) 356 is moved to the front of the lower frame 310 and the upper frame 330, respectively. Then, the height of the leg member 350 is gradually increased, thereby raising the upper frame 330.

The upper frame 330 may be smoothly lifted and lowered by the operation members 360 and 365 during the lifting of the upper frame 330.

On the other hand, apart from this lifting operation, the auxiliary connecting body 375 is vertical to each of the upper side body (331, 335) to be used for the purpose, such as a work indicator board, or the auxiliary connecting body 375 is laid in parallel, the auxiliary table 377 can be used to expand the table area of the table panel (301).

Lifting operation of the lift table as described above may be made in a state fixed to the other object by the fixing member and the fixed connection member 370.

One end of the operating member (360, 365) is connected to the roller connecting shaft (355, 357), the other end of the operating member (360, 365) a plurality of constituting the leg member 350 The roller connecting shafts 355 and 357 of the legs are connected to a leg different from the leg to which they are connected, so that the roller connecting shafts 355 and 357 must be present for the connection of the rollers in the lifting device 300 for the lift table. Since one end of the operating member (360, 365) can be connected to, the structure for connection of one end of the operating member (360, 365) can be replaced by the roller connecting shaft (355, 357) Therefore, the structure for the connection of the operating member 360, 365 can be made in a simplified structure is minimized.

As the auxiliary device mounting member and the auxiliary device connecting member 370 are provided, an auxiliary device such as an auxiliary table, a work instruction board, and the like can be integrally attached to the lift table, and such an auxiliary device can be easily detached and replaced. It can be easily converted to various uses by setting up or laying the attached auxiliary device.

As described above, as the lifting device 300 for the lift table includes the fixing member together with the lower frame 310, the upper frame 330, and the leg member 350, the fixing member is attached to the fixing member. As the other object is detachably coupled, the lift table can be easily fixed to the other object.

Hereinafter, a lift table lift apparatus according to a fourth embodiment of the present invention will be described with reference to the drawings.

20 is a front view of a lift table to which a lift device for a lift table according to a second embodiment of the present invention is applied.

Referring to FIG. 20, in the present embodiment, the auxiliary device connecting member 470 is vertically erected in the upper rear connecting member 445, which is the auxiliary device mounting member, and at the top of the auxiliary device connecting member 470. The auxiliary table 477 is placed in the air above the table panel in parallel with the table panel. Then, the auxiliary table 477 may be arranged in the form of a two-stage table over the rear side of the table panel.

While the invention has been shown and described with respect to specific embodiments thereof, those skilled in the art can variously modify the invention without departing from the spirit and scope of the invention as set forth in the claims below. And that it can be changed. Nevertheless, it will be clearly understood that all such modifications and variations are included within the scope of the present invention.

According to the elevating device for a lift table according to an aspect of the present invention, the structure for connecting the operating members such as gas springs, hydraulic cylinders, etc. can be achieved in a simple structure with a minimum, and the auxiliary device is integrated in the lift table. It can be additionally attached, and

the lift table can be detachably fixed to other objects, so the industrial applicability is high.

Patent Citations (5)

Publication number	Priority date	Publication date	Assignee	Title
KR19990029343U *	1997-12-29	1999-07-15	정몽규	Jack handlebars for jack handle operation
DE19837188C1 *	1998-08-17	1999-09-30	Diw Bueroeinrichtungen Gmbh	Coupling for office furniture frame
JP2014027987A *	2012-07-31	2014-02-13	Paramount Bed Co Ltd	X link elevating mechanism
KR101435160B1 *	2014-03-28	2014-08-29	제트스타 주식회사	Multi-functional bed
KR200478652Y1 *	2015-04-03	2015-11-02	주식회사 에스엠티	A standing table
Family To Family Citations				

* Cited by examiner, † Cited by third party

Cited By (2)

Publication number	Priority date	Publication date	Assignee	Title
CN108813955A *	2018-07-24	2018-11-16	合肥爱玩动漫有限公司	A kind of cartoon design workbench
CN110326888A *	2019-07-22	2019-10-15	杭州席媒科技有限公司	A kind of table top riser being able to carry out right angle movement
Family To Family Citations				

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
WO2018093007A1	2018-05-24	Device for elevating lift table
WO2016006822A1	2016-01-14	Headrest moving device
WO2014116062A1	2014-07-31	Trolley
WO2013172565A1	2013-11-21	Six-legged walking robot having robotic arms for legs and plurality of joints
EP2737471A1	2014-06-04	Display apparatus
CN107107976A	2017-08-29	Head, Remote Control Vehicle and remote control delivery system
WO2017222196A1	2017-12-28	Cable support guide
WO2020222570A1	2020-11-05	Stackable module robot
WO2021194101A1	2021-09-30	Acute angle guide-driven wire clip for wire grip capable of indirect live wire work, and method for fixing wire using same
WO2014168421A1	2014-10-16	Thermotherapy device
WO2014003258A1	2014-01-03	Vehicle wiper multi-adapter
WO2015020269A1	2015-02-12	Apparatus for fixing position of workpiece
WO2015167276A1	2015-11-05	Apparatus for adhering film
WO2017018780A1	2017-02-02	Prefabricated coffin and assembly method thereof
WO2017179756A1	2017-10-19	Tripod journal cross bearing disassembling and assembling apparatus
WO2017007065A1	2017-01-12	Autoclave device capable of removing bubbles in multiple stages

WO2019035667A1	2019-02-21	Display apparatus
WO2015160003A1	2015-10-22	Drive control device for construction equipment and control method therefor
WO2017150933A1	2017-09-08	Variable gravitational torque compensation apparatus and control method therefor
WO2020256504A2	2020-12-24	Surgical system
WO2019221517A1	2019-11-21	Motorized easel
WO2018038334A1	2018-03-01	Tilting stage system
WO2018021763A1	2018-02-01	Multidirectional suspension device for walking exercise
WO2015005588A1	2015-01-15	Dovetail processing apparatus and processing method for horizontally loading wood plate
WO2018062736A1	2018-04-05	Vibration control device

Priority And Related Applications

Priority Applications (4)

Application	Priority date	Filing date	Title
KR1020160155335A	2016-11-21	2016-11-21	Combining structure of lift table
KR1020160155332		2016-11-21	
KR10-2016-0155332		2016-11-21	
KR10-2016-0155335		2016-11-21	

Legal Events

Date	Code	Title	Description
2018-11-28	121	Ep: the epo has been informed by wipo that ep was designated in this application	**Ref document number:** 17871407 **Country of ref document:** EP **Kind code of ref document:** A1
2019-05-22	NENP	Non-entry into the national phase in:	**Ref country code:** DE
2019-12-18	122	Ep: pct application non-entry in european phase	**Ref document number:** 17871407 **Country of ref document:** EP **Kind code of ref document:** A1

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
elevating		title,claims,abstract,description	16	0.000
coupling		claims,description	11	0.000
coupling process		claims,description	11	0.000
coupling reaction		claims,description	11	0.000
installation		claims,description	11	0.000

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(12) 특허협력조약에 의하여 공개된 국제출원

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(81) 지정국 (별도의 표시가 없는 한, 가능한 모든 종류의 국내 권리의 보호를 위하여): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

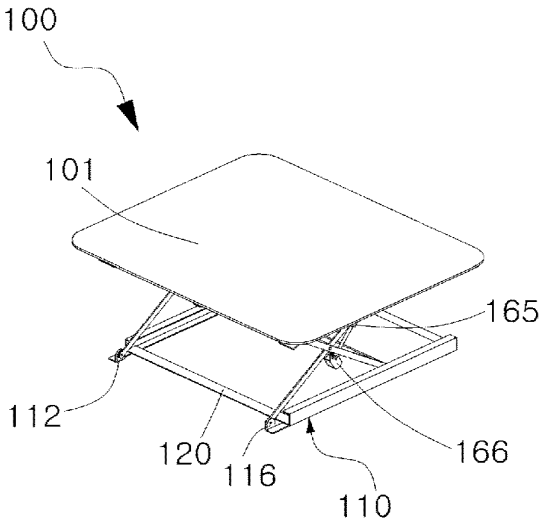
(84) 지정국 (별도의 표시가 없는 한, 가능한 모든 종류의 역내 권리의 보호를 위하여): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), 유라시아 (AM, AZ, BY, KG, KZ, RU, TJ, TM), 유럽 (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

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— 국제조사보고서와 함께 (조약 제21조(3))

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(54) Title: DEVICE FOR ELEVATING LIFT TABLE

(54) 발명의 명칭: 리프트 테이블용 승강 장치



(57) Abstract: Disclosed is a device for elevating a lift table comprising: a lower frame; an upper frame; a leg member; a roller member; a roller connection shaft; and an operating member, wherein one end of the operating member is connected to the roller connection shaft, and the other end of the operating member is connected to a leg other than a leg that is connected to the roller connection shaft from a plurality of legs constituting the leg member. Therefore, the roller connection shaft can replace a structure for connecting the one end of the operating member, and thus there is an advantage in that the structure for connecting the operating member is minimized and simplified.

(57) 요약서: 개시되는 리프트 테이블용 승강 장치가 하부 프레임, 상부 프레임, 레그 부재, 롤러 부재, 롤러 연결 축 및 작동 부재를 포함하고, 상기 작동 부재의 일 측 말단부가 상기 롤러 연결 축에 연결되고, 상기 작동 부재의 타 측 말단부가 상기 레그 부재를 구성하는 복수 개의 레그 중 상기 롤러 연결 축이 연결된 레그와 다른 레그에 연결됨으로써, 작동 부재의 일 측 말단부의 연결을 위한 구조물이 상기 롤러 연결 축으로 대체될 수 있어서, 상기 작동 부재의 연결을 위한 구조물이 최소화된 간명한 구조가 이루어질 수 있게 되는 장점이 있다.

명세서

발명의 명칭: 리프트 테이블용 승강 장치

기술분야

[1] 본 발명은 리프트 테이블용 승강 장치에 관한 것이다.

배경기술

[2] 리프트 테이블은 산업 현장이나 학교 등에 배치되고, 그 상단에 설치된 평평한 테이블 패널 상에서 이용자가 작업, 학습 등을 할 수 있는 것이고, 그 테이블 패널의 높낮이를 조절할 수 있는 것이다.

[3] 상기와 같이, 리프트 테이블에서 테이블 패널의 높낮이를 조절하기 위한 구조물이 리프트 테이블용 승강 장치이다.

[4] 상세히, 일반적으로 리프트 테이블은 그 설치면 상에 놓이는 하부 프레임과, 상기 테이블 패널이 놓이는 상부 프레임과, 상기 하부 프레임과 상기 상부 프레임에 각 말단이 각각 연결되되 서로 교차되는 형태로 배치되는 두 쌍의 레그를 포함한다.

[5] 이러한 구조의 리프트 테이블이 보다 적은 외력으로도 매끄럽게 승강될 수 있도록하는 작동 부재로 가스 스프링(gas cylinder) 또는 유압 실린더가 적용되는데, 이러한 작동 부재의 각 말단이 상부 프레임과 하부 프레임 중 하나와 레그 중 하나를 연결하거나, 한 쌍의 레그를 서로 연결하는 구조로 이루어지고 있다.

[6] 이러한 리프트 테이블의 예로 공개특허 제 10-2016-0100175호(발명의 명칭: 높낮이 조절이 가능한 책상), 등록특허 제 10-1575195호(발명의 명칭: 테이블 리프트) 등이 제시될 수 있다.

[7] 그러나, 종래의 리프트 테이블용 승강 장치에 의하면, 작동 부재의 각 말단이 상부 프레임과 하부 프레임 중 하나와 레그 중 하나를 연결하거나, 한 쌍의 레그를 서로 연결하는 구조로 이루어짐에 따라, 작동 부재의 각 말단이 각각 프레임 또는 레그에 연결되어져야 하고, 그에 따라 작동 부재의 각 말단과 프레임 또는 레그에 연결하기 위한 구조물이 작동 부재의 각 말단에 각각 적용되어져야 해서, 그러한 연결을 위한 추가 구조물이 많아져서, 리프트 테이블의 제작 비용이 증가하는 원인이 되고, 부품 수의 증가로 인해 잦은 고장의 원인이 되고 있다.

[8] 또한, 종래의 리프트 테이블용 보조 장치 부착 구조에 의하면, 테이블 패널 이외에 보조 테이블, 작업 지시판 등의 보조 장치에 대한 추가 부착이 필요한 경우, 이러한 보조 장치에 대한 추가 부착을 위한 구조물이 별도로 구비되어 있지 않아서, 그러한 보조 장치에 대한 추가 부착이 곤란할 뿐만 아니라, 별도 고정 수단을 이용하여야 하여서 일체성있는 추가 부착도 불가능한 단점이 있다.

[9] 또한, 종래의 리프트 테이블용 승강 장치에 의하면, 리프트 테이블을 타 물체,

예를 들어 공개특허 제 10-2016-0111905호(발명의 명칭: 산업용 선반 형성 랙 시스템 및 상기 산업용 선반 형성 랙 시스템에 적용되는 파이프용 조인트) 등에 고정시키고자 하는 경우, 마땅히 리프트 테이블을 그 타 물체에 고정할만한 수단이 없어서, 나사 등을 이용하여 체결하여야 하므로, 리프트 테이블과 타 물체 모두에 손상이 가해질 수 있고, 반복적인 착탈 결합이 이루어질 수 없는 단점이 있다.

발명의 상세한 설명

기술적 과제

[10] 본 발명은 가스 스프링, 유압 실린더 등의 작동 부재를 연결하기 위한 구조물이 최소화된 간명한 구조를 이루는 리프트 테이블용 승강 장치를 제공하는 것을 일 목적으로 한다.

[11] 본 발명의 다른 목적은 리프트 테이블에 보조 장치를 일체성 있게 추가 부착할 수 있는 리프트 테이블용 승강 장치를 제공하는 것이다.

[12] 본 발명의 또 다른 목적은 리프트 테이블을 타 물체에 착탈 가능하게 고정시킬 수 있는 리프트 테이블용 승강 장치를 제공하는 것이다.

과제 해결 수단

[13] 본 발명의 일 측면에 따른 리프트 테이블용 승강 장치는 설치면에 놓이는 하부 프레임; 상기 하부 프레임에 대해 상대적으로 승강될 수 있는 상부 프레임; 상기 하부 프레임과 상기 상부 프레임 사이를 연결하되, 상기 하부 프레임에 대한 상기 상부 프레임의 상대적인 높이가 변경될 수 있도록 하는 레그 부재; 상기 레그 부재에 연결되어, 상기 레그 부재의 회동에 따라, 상기 상부 프레임의 승강 시에 상기 상부 프레임과 상기 하부 프레임 중 적어도 하나를 따라 이동될 수 있는 롤러 부재; 상기 상부 프레임과 상기 하부 프레임 중 같은 프레임을 따라 이동되고 상기 롤러 부재를 구성하는 롤러의 쌍을 연결해주는 롤러 연결 축; 및 상기 상부 프레임의 승강이 매끄럽게 이루어지도록 작동되되, 그 일 측 말단부는 상기 롤러 연결 축에 연결되고, 그 타 측 말단부는 상기 레그 부재를 구성하는 복수 개의 레그 중 상기 롤러 연결 축이 연결된 레그와 다른 레그에 연결되는 작동 부재;를 포함한다.

[14] 본 발명의 다른 측면에 따른 리프트 리프트 테이블용 승강 장치는 설치면에 놓이는 하부 프레임; 상기 하부 프레임에 대해 상대적으로 승강될 수 있는 상부 프레임; 상기 하부 프레임과 상기 상부 프레임 사이를 연결하되, 상기 하부 프레임에 대한 상기 상부 프레임의 상대적인 높이가 변경될 수 있도록 하는 레그 부재; 및 상기 상부 프레임에 보조 장치를 착탈 가능하게 연결할 수 있는 보조 장치 장착 부재;를 포함한다.

[15] 본 발명의 또 다른 측면에 따른 리프트 테이블용 승강 장치는 리프트 테이블을 타 물체에 고정하기 위한 것으로서,

[16] 설치면에 놓이는 하부 프레임; 상기 하부 프레임에 대해 상대적으로 승강될 수

있고, 테이블 패널이 배치되는 상부 프레임; 상기 하부 프레임과 상기 상부 프레임 사이를 연결하되, 상기 하부 프레임에 대한 상기 상부 프레임의 상대적인 높이가 변경될 수 있도록 하는 레그 부재; 및 상기 리프트 테이블이 상기 타 물체에 고정되도록, 상기 상부 프레임과 상기 하부 프레임 중 적어도 하나에서 연장되어, 상기 타 물체에 결합되는 고정 부재;를 포함한다.

[17] 본 발명의 또 다른 측면에 따른 리프트 테이블용 승강 장치는 설치면에 놓이는 하부 프레임; 상기 하부 프레임에 대해 상대적으로 승강될 수 있는 상부 프레임; 상기 하부 프레임과 상기 상부 프레임 사이를 연결하되, 상기 하부 프레임에 대한 상기 상부 프레임의 상대적인 높이가 변경될 수 있도록 하는 레그 부재; 상기 상부 프레임에 보조 장치를 착탈 가능하게 연결할 수 있는 보조 장치 장착 부재; 및 리프트 테이블이 타 물체에 고정되도록 하는 고정 부재;를 포함한다.

발명의 효과

[18] 본 발명의 일 측면에 따른 리프트 테이블용 승강 장치에 의하면, 리프트 테이블용 승강 장치가 하부 프레임, 상부 프레임, 레그 부재, 롤러 부재, 롤러 연결 축 및 작동 부재를 포함하고, 상기 작동 부재의 일 측 말단부가 상기 롤러 연결 축에 연결되고, 상기 작동 부재의 타 측 말단부가 상기 레그 부재를 구성하는 복수 개의 레그 중 상기 롤러 연결 축이 연결된 레그와 다른 레그에 연결됨으로써, 상기 리프트 테이블용 승강 장치에서 롤러의 연결을 위해 필수적으로 존재하여야 하는 상기 롤러 연결 축에 상기 작동 부재의 일 측 말단부가 연결될 수 있으므로, 상기 작동 부재의 일 측 말단부의 연결을 위한 구조물이 상기 롤러 연결 축으로 대체될 수 있고, 그에 따라 상기 작동 부재의 연결을 위한 구조물이 최소화된 간명한 구조가 이루어질 수 있게 되는 효과가 있다.

[19] 본 발명의 다른 측면에 따른 리프트 테이블용 보조 장치 부착 구조에 의하면, 리프트 테이블용 보조 장치 부착 구조가 하부 프레임, 상부 프레임 및 레그 부재와 함께, 상기 상부 프레임에 보조 장치를 착탈 가능하게 연결할 수 있는 보조 장치 연결 부재를 포함함에 따라, 리프트 테이블에 보조 테이블, 작업 지시판 등의 보조 장치를 일체성있게 추가 부착할 수 있고, 그러한 보조 장치를 간편하게 착탈 및 교체시킬 수 있으며, 부착된 보조 장치를 세우거나 눕혀서 다양한 용도로 간편하게 전환하여 사용할 수 있는 효과가 있다.

[20] 본 발명의 또 다른 측면에 따른 리프트 테이블용 승강 장치에 의하면, 리프트 테이블용 승강 장치가 하부 프레임, 상부 프레임 및 레그 부재와 함께, 리프트 테이블이 타 물체에 고정되도록, 상기 상부 프레임과 상기 하부 프레임 중 적어도 하나에서 연장되어, 상기 타 물체에 결합되는 고정 부재를 포함함에 따라, 상기 고정 부재를 상기 타 물체에 착탈 가능하게 결합시켜 줌으로써, 상기 리프트 테이블을 상기 타 물체에 착탈 가능하게 간편하게 고정시킬 수 있게 되는 효과가 있다.

도면의 간단한 설명

[21] 도 1은 본 발명의 제 1 실시예에 따른 리프트 테이블용 승강 장치가 결합된 모습을 보이는 사시도.

[22] 도 2는 본 발명의 제 1 실시예에 따른 리프트 테이블용 승강 장치에서 테이블 패널이 분리된 모습을 보이는 사시도.

[23] 도 3은 본 발명의 제 1 실시예에 따른 리프트 테이블용 승강 장치가 분리된 모습을 보이는 사시도.

[24] 도 4는 본 발명의 제 1 실시예에 따른 리프트 테이블용 승강 장치를 정면에서 바라본 도면.

[25] 도 5는 본 발명의 제 1 실시예에 따른 리프트 테이블용 승강 장치가 수축된 모습을 정면에서 바라본 도면.

[26] 도 6은 도 2에 도시된 A 부분을 확대한 도면.

[27] 도 7은 도 6에 도시된 부분이 분해된 모습을 보이는 도면.

[28] 도 8은 본 발명의 제 2 실시예에 따른 리프트 테이블용 승강 장치를 정면에서 바라본 도면.

[29] 도 9는 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블이 결합된 모습을 보이는 사시도.

[30] 도 10은 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블에서 테이블 패널이 분리된 모습을 전측 위에서 비스듬히 내려다본 사시도.

[31] 도 11은 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블이 분리된 모습을 보이는 사시도.

[32] 도 12는 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블을 정면에서 바라본 도면.

[33] 도 13은 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블이 수축된 모습을 정면에서 바라본 도면.

[34] 도 14는 도 10에 도시된 B부분을 확대한 도면.

[35] 도 15는 도 14에 도시된 부분이 분해된 모습을 보이는 도면.

[36] 도 16은 도 11에 도시된 C 부분을 확대한 도면.

[37] 도 17은 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블에서 보조 테이블이 눕혀진 모습을 정면에서 바라본 도면.

[38] 도 18은 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블에서 테이블 패널이 분리된 모습을 후측 위에서 비스듬히 내려다본 사시도.

[39] 도 19는 도 18에 도시된 D 부분을 확대한 도면.

[40] 도 20은 본 발명의 제 4 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블을 정면에서 바라본 도면.

발명의 실시를 위한 최선의 형태

[41] 이하에서는 도면을 참조하여 본 발명의 실시예들에 따른 리프트 테이블용 승강 장치에 대하여 설명한다.

[42] 도 1은 본 발명의 제 1 실시예에 따른 리프트 테이블용 승강 장치가 결합된 모습을 보이는 사시도이고, 도 2는 본 발명의 제 1 실시예에 따른 리프트 테이블용 승강 장치에서 테이블 패널이 분리된 모습을 보이는 사시도이고, 도 3은 본 발명의 제 1 실시예에 따른 리프트 테이블용 승강 장치가 분리된 모습을 보이는 사시도이고, 도 4는 본 발명의 제 1 실시예에 따른 리프트 테이블용 승강 장치를 정면에서 바라본 도면이고, 도 5는 본 발명의 제 1 실시예에 따른 리프트 테이블용 승강 장치가 수축된 모습을 정면에서 바라본 도면이고, 도 6은 도 2에 도시된 A 부분을 확대한 도면이고, 도 7은 도 6에 도시된 부분이 분해된 모습을 보이는 도면이다.

[43] 도 1 내지 도 7을 함께 참조하면, 본 실시예에 따른 리프트 테이블용 승강 장치(100)는 하부 프레임(110)과, 상부 프레임(130)과, 레그 부재(150)와, 롤러 부재(156, 158)와, 롤러 연결 축(155, 157)과, 작동 부재(160, 165)를 포함한다.

[44] 상기 하부 프레임(110)은 상기 리프트 테이블용 승강 장치(100)의 하부 구조를 이루고, 상기 리프트 테이블용 승강 장치(100)가 설치되는 설치면에 직접 닿도록 놓이는 것이다.

[45] 상세히, 상기 하부 프레임(110)은 서로 평행하게 배치되는 한 쌍의 하부 측면체(111, 115)와, 상기 각 하부 측면체(111, 115)의 전방부를 서로 연결하는 하부 전방 연결체(120)와, 상기 각 하부 측면체(111, 115)의 후방부를 서로 연결하는 하부 후방 연결체(125)를 포함하여, 내부가 빈 사각형 형태로 이루어진다.

[46] 상기 각 하부 측면체(111, 115)의 전방부에는 후술되는 제 1 레그(151)의 하부가 일정 각도 범위에서 회전되는 회동이 가능하도록 연결되는 제 1 레그 연결부(112, 116)가 형성되고, 상기 각 하부 측면체(111, 115)의 서로 마주보는 면에는 각각 후술되는 제 2 레그(152)의 하부에 연결된 하부 롤러(158)가 회전되면서 이동될 수 있는 하부 롤러 이동홀(113, 117)이 형성된다.

[47] 상기 상부 프레임(130)은 상기 리프트 테이블용 승강 장치(100)의 상부 구조를 이루고, 상기 하부 프레임(110)에 대해 상대적으로 승강될 수 있고, 상기 상부 프레임(130)의 상단에 일정 면적으로 넓은 플레이트 형태의 테이블 패널(101)이 배치되는 것이다.

[48] 상세히, 상기 상부 프레임(130)은 서로 평행하게 배치되는 한 쌍의 상부 측면체(131, 135)와, 상기 각 상부 측면체(131, 135)의 전방부를 서로 연결하는 상부 전방 연결체(140)와, 상기 각 상부 측면체(131, 135)의 후방부를 서로 연결하는 상부 후방 연결체(145)를 포함하여, 내부가 빈 사각형 형태로 이루어진다.

[49] 상기 각 상부 측면체(131, 135)의 전방부에는 상기 제 2 레그(152)의 상부가 일정 각도 범위에서 회전되는 회동이 가능하도록 연결되는 제 2 레그 연결부(132, 136)가 형성되고, 상기 각 상부 측면체(131, 135)의 서로 마주보는 면에는 각각 상기 제 1 레그(151)의 상부에 연결된 상부 롤러(156)가 회전되면서 이동될 수 있는 상부 롤러 이동홀(133, 137)이 형성된다.

[50] 상기 레그 부재(150)는 상기 하부 프레임(110)과 상기 상부 프레임(130) 사이를 연결하되, 상기 하부 프레임(110)에 대한 상기 상부 프레임(130)의 상대적인 높이가 변경될 수 있도록 하는 것이다.

[51] 상세히, 상기 레그 부재(150)는 일정 길이의 바아 형태로 형성되는 상기 제 1 레그(151)와, 일정 길이의 바아 형태로 형성되고 상기 제 1 레그(151)와 교차되되 일정 각도 범위에서 회전되는 회동이 가능하게 연결되는 상기 제 2 레그(152)를 포함한다.

[52] 상기 제 1 레그(151)와 상기 제 2 레그(152)는 임의의 위치, 예를 들어 각 중앙부가 레그 회동축(153)을 중심으로 연결되어, 전체적으로 'X'자 형태로 교차되도록 형성될 수 있다.

[53] 상기 제 1 레그(151)의 하부와 상기 제 2 레그(152)의 상부가 가까워지고 상기 제 1 레그(151)의 상부와 상기 제 2 레그(152)의 하부가 가까워지도록 회동되면, 상기 레그 부재(150)의 높이는 낮아지게 되고, 그에 따라 상기 상부 프레임(130)이 상기 하부 프레임(110) 쪽으로 하강하게 된다.

[54] 반면, 상기 제 1 레그(151)의 하부와 상기 제 2 레그(152)의 상부가 멀어지고 상기 제 1 레그(151)의 상부와 상기 제 2 레그(152)의 하부가 멀어지도록 회동되면, 상기 레그 부재(150)의 높이는 높아지게 되고, 그에 따라 상기 상부 프레임(130)이 상기 하부 프레임(110) 쪽으로부터 상승하게 된다.

[55] 상기 레그 부재(150)는 상기 하부 프레임(110)과 상기 상부 프레임(130)의 양 측에 각각 하나씩 설치된다.

[56] 상기 롤러 부재(156, 158)는 상기 레그 부재(150)에 연결되어, 상기 레그 부재(150)의 회동에 따라, 상기 상부 프레임(130)의 승강 시에 상기 상부 프레임(130)과 상기 하부 프레임(110) 중 적어도 하나를 따라 이동될 수 있는 것이다.

[57] 상세히, 상기 롤러 부재(156, 158)는 상기 제 2 레그(152)의 하부에 회전 가능하게 연결되고 상기 하부 롤러 이동홀(113, 117)을 따라 이동될 수 있는 상기 하부 롤러(158)와, 상기 제 1 레그(151)의 상부에 회전 가능하게 연결되고 상기 상부 롤러 이동홀(133, 137)을 따라 이동될 수 있는 상기 상부 롤러(156)를 포함한다.

[58] 상기 하부 롤러(158)와 상기 상부 롤러(156)는 각각 한 쌍으로 구성되어, 각각 하나씩 상기 각 제 1 레그(151)와, 상기 각 제 2 레그(152)에 연결된다.

[59] 상기 롤러 연결 축(155, 157)은 상기 상부 프레임(130)과 상기 하부 프레임(110) 중 같은 프레임을 따라 이동되는 롤러의 쌍을 연결해주는 것이다. 즉, 상기 롤러

연결 축(155, 157) 중 상측에 배치된 것(155)은 상기 상부 프레임(130) 내부를 가로질러 한 쌍의 상기 상부 롤러(156)를 서로 연결해 주고, 상기 롤러 연결 축(155, 157) 중 하측에 배치된 것(157)은 상기 하부 프레임(110) 내부를 가로질러 한 쌍의 상기 하부 롤러(158)를 서로 연결해 준다.

[60] 상기 제 1 레그(151)의 하단부는 상기 하부 프레임(110)의 일 측 말단부인 상기 제 1 레그 연결부(112, 116)에 회동 가능하게 연결되고, 상기 제 1 레그(151)의 상단부는 상기 상부 프레임(130)의 승강 시에 상기 상부 롤러 이동홀(133, 137)을 따라 이동 가능하게 배치되고, 상기 제 1 레그(151)의 상단부는 상기 롤러 연결 축(155, 157) 중 상측에 배치된 것(155)에 연결되고, 상기 제 2 레그(152)의 상단부는 상기 상부 프레임(130)의 일 측 말단부인 상기 제 2 레그 연결부(132, 136)에 회동 가능하게 연결되고, 상기 제 2 레그(152)의 하단부는 상기 상부 프레임(130)의 승강 시에 상기 상기 하부 롤러 이동홀(113, 117)을 따라 이동 가능하게 배치되고, 상기 제 2 레그(152)의 하단부는 상기 롤러 연결 축(155, 157) 중 하측에 배치된 것(157)에 연결된다.

[61] 상기 각 롤러 연결 축(155, 157)에 의해 한 쌍의 상기 제 1 레그(151)의 상단부와 한 쌍의 상기 제 2 레그(152)의 하단부가 각각 서로 연결되고, 상기 각 롤러 연결 축(155, 157)의 각 말단에 한 쌍의 상기 상부 롤러(156)와 한 쌍의 상기 하부 롤러(158)가 각각 연결됨으로써, 상기 제 1 레그(151)와 상기 제 2 레그(152)가 매끄럽게 이동될 수 있음과 함께, 상기 하부 프레임(110)과 상기 상부 프레임(130)의 양 측에 각각 설치된 상기 각 레그 부재(150)가 서로 연동되면서 동작될 수 있어서, 상기 상부 프레임(130)의 승강이 보다 매끄럽게 이루어질 수 있다.

[62] 상기 작동 부재(160, 165)는 상기 상부 프레임(130)의 승강이 매끄럽게 이루어지도록 작동되되, 상기 작동 부재(160, 165)의 일 측 말단부는 상기 롤러 연결 축(155, 157) 중 하나에 연결되고, 상기 작동 부재(160, 165)의 타 측 말단부는 상기 레그 부재(150)를 구성하는 복수 개의 레그 중 상기 롤러 연결 축(155, 157)이 연결된 레그와 다른 레그에 연결되는 것이다.

[63] 상기 작동 부재(160, 165)는 가스 스프링(gas cylinder)과 유압 실린더 중 적어도 하나로 이루어진다.

[64] 본 실시예에서는, 상기 작동 부재(160, 165)의 상부가 상기 롤러 연결 축(155, 157) 중 상측에 배치된 것(155), 즉 상기 제 1 레그(151)의 상단부를 서로 연결한 것에 회동 가능하게 연결되고, 상기 작동 부재(160, 165)의 하부가 상기 제 1 레그(151)와 상기 제 2 레그(152)가 교차된 지점의 하측에서 상기 제 2 레그(152)에 회동 가능하게 연결된다. 예를 들어, 상기 작동 부재(160, 165)가 유압 실린더인 경우, 실린더 몸체가 상기 롤러 연결 축(155, 157) 중 상측에 배치된 것(155)에 연결되고, 피스톤이 상기 레그 부재(150)의 상기 제 2 레그(152)에 회동 가능하게 연결될 수 있다.

[65] 상기 롤러 연결 축(155, 157) 중 상측에 배치된 것(155)에는 고정 홈(155a)이

형성되고, 상기 작동 부재(160, 165)의 상부가 상기 롤러 연결 축(155, 157) 중 상측에 배치된 것(155)에 연결된 상태가 유지되도록, 상기 고정 홈(155a)에 고정 수단(155b)이 결합된다.

[66] 상기 고정 홈(155a)은 상기 작동 부재(160, 165)의 일 측 말단부가 연결되는 부분의 양 측에 각각 형성되고, 상기 각 고정 홈(155a)에 상기 고정 수단(155b)이 각각 결합된다.

[67] 상기 고정 수단(155b)은 C형 고정 링으로 제시될 수 있다.

[68] 이러한 상기 고정 홈(155a)과 상기 고정 수단(155b)에 대한 설명은 도시되지는 않았지만, 상기 롤러 연결 축(155, 157) 중 하측에 배치된 것(157)에도 동일하게 적용된다.

[69] 상기와 같이, 상기 롤러 연결 축(155, 157) 중 상측에 배치된 것(155)에 상기 작동 부재(160, 165)의 상부가 연결되고, 상기 작동 부재(160, 165)의 상부 양 측에 형성된 상기 각 고정 홈(155a)에 상기 고정 수단(155b)이 각각 결합됨으로써, 상기 롤러 연결 축(155, 157)에 상기 작동 부재(160, 165)의 상부가 회동 가능하게 연결되면서도, 상기 롤러 연결 축(155, 157)에서 상기 작동 부재(160, 165)의 상부가 이동되는 좌우 유동이 발생되지 않게 된다.

[70] 한편, 본 실시예에서는, 상기 리프트 테이블용 승강 장치(100)가 승강력 조절 부재(161, 166)를 포함한다.

[71] 상기 승강력 조절 부재(161, 166)는 상기 작동 부재(160, 165)의 일 측 말단부가 상기 제 2 레그(152)의 중앙선으로부터 상기 상부 프레임(130)과 상기 하부 프레임(110) 중 어느 하나의 방향으로 이격된(offset) 부분에 연결되도록, 상기 작동 부재(160, 165)의 하부와 상기 제 2 레그(152) 사이에 개입되어 상기 작동 부재(160, 165)의 하부와 상기 제 2 레그(152)를 연결하는 것이다.

[72] 상세히, 상기 승강력 조절 부재(161, 166)는 상기 제 2 레그(152)로부터 일정 길이 돌출되고, 상기 승강력 조절 부재(161, 166)의 말단부에 상기 작동 부재(160, 165)의 하부가 회동 가능하게 연결된다.

[73] 상기 승강력 조절 부재(161, 166)는 상기 제 2 레그(152)의 중앙선으로부터 수직으로 일정 길이 돌출된 것으로, 상기 승강력 조절 부재(161, 166)의 말단부에 상기 작동 부재(160, 165)의 하부가 회동 가능하게 연결됨으로써, 상기 작동 부재(160, 165)의 하부가 상기 제 2 레그(152)의 중앙선으로부터 이격된 부분에 연결될 수 있고, 그에 따라 상기 제 1 레그(151)와 상기 제 2 레그(152)가 근접되도록 접힌 상태에서도 상기 작동 부재(160, 165)의 승강력이 감소되는 것을 최소화시킬 수 있다.

[74] 도면 번호 105는 고정 레버로서, 상기 고정 레버(105)를 사용자가 손으로 움켜쥐면, 상기 리프트 테이블용 승강 장치(100)의 고정이 해제되어 승강 가능한 상태가 될 수 있고, 상기 고정 레버(105)를 놓으면, 상기 리프트 테이블용 승강 장치(100)가 다시 고정된다. 이러한 고정 레버(105)의 구체적인 구조는 본 발명의 범위 외의 것이면서 일반적인 것이므로, 여기서는 그 구체적인 도시 및 설명을

생략한다.

[75] 이하에서는 도면을 참조하여 본 실시예에 따른 리프트 테이블용 승강 장치(100)의 작동에 대하여 설명한다.

[76] 먼저, 사용자가 상기 고정 레버(105)를 잡고 손으로 움켜쥐어 상기 리프트 테이블용 승강 장치(100)의 고정이 해제된 상태에서, 사용자가 상기 리프트 테이블용 승강 장치(100)를 누르면, 상기 제 1 레그(151)와 상기 제 2 레그(152)의 양 말단이 서로 근접되도록 상기 하부 롤러(158)와 상기 상부 롤러(156)가 각각 상기 하부 프레임(110)과 상기 상부 프레임(130)의 후방부로 이동된다. 그러면, 상기 레그 부재(150)의 높이가 점차 낮아지고, 그에 따라 상기 상부 프레임(130)이 하강된다.

[77] 한편, 사용자가 상기 리프트 테이블용 승강 장치(100)를 들어올리면, 상기 제 1 레그(151)와 상기 제 2 레그(152)의 양 말단이 서로 멀어지도록 상기 하부 롤러(158)와 상기 상부 롤러(156)가 각각 상기 하부 프레임(110)과 상기 상부 프레임(130)의 전방부로 이동된다. 그러면, 상기 레그 부재(150)의 높이가 점차 높아지고, 그에 따라 상기 상부 프레임(130)이 상승된다.

[78] 이러한 상기 상부 프레임(130)의 승강 중에 상기 작동 부재(160, 165)에 의해 상기 상부 프레임(130)이 매끄럽게 승강될 수 있다.

[79] 상기와 같이, 상기 리프트 테이블용 승강 장치(100)가 상기 하부 프레임(110), 상기 상부 프레임(130), 상기 레그 부재(150), 상기 롤러 부재(156, 158), 상기 롤러 연결 축(155, 157) 및 상기 작동 부재(160, 165)를 포함하고, 상기 작동 부재(160, 165)의 일 측 말단부가 상기 롤러 연결 축(155, 157)에 연결되고, 상기 작동 부재(160, 165)의 타 측 말단부가 상기 레그 부재(150)를 구성하는 복수 개의 레그 중 상기 롤러 연결 축(155, 157)이 연결된 레그와 다른 레그에 연결됨으로써, 상기 리프트 테이블용 승강 장치(100)에서 롤러의 연결을 위해 필수적으로 존재하여야 하는 상기 롤러 연결 축(155, 157)에 상기 작동 부재(160, 165)의 일 측 말단부가 연결될 수 있으므로, 상기 작동 부재(160, 165)의 일 측 말단부의 연결을 위한 구조물이 상기 롤러 연결 축(155, 157)으로 대체될 수 있고, 그에 따라 상기 작동 부재(160, 165)의 연결을 위한 구조물이 최소화된 간명한 구조가 이루어질 수 있게 된다.

발명의 실시를 위한 형태

[80] 이하에서는 도면을 참조하여 본 발명의 다른 실시예들에 따른 리프트 테이블용 승강 장치에 대하여 설명한다. 이러한 설명을 수행함에 있어서, 상기된 본 발명의 제 1 실시예에서 이미 기재된 내용과 중복되는 설명은 그에 갈음하고, 여기서는 생략하기로 한다.

[81] 도 8은 본 발명의 제 2 실시예에 따른 리프트 테이블용 승강 장치를 정면에서 바라본 도면이다.

[82] 도 8을 참조하면, 본 실시예에서는, 롤러 연결 축(255, 257)에 의해 연결된 롤러

중 하부 프레임(210)을 따라 이동되는 한 쌍의 하부 롤러(258)는 상기 하부 프레임(210) 중 서로 마주보는 각 측면부를 따라 이동되도록 설치되고, 상기 롤러 연결 축(255, 257) 중 하측에 배치된 것(257)은 상기 하부 프레임(210) 내부를 가로질러 상기 각 하부 롤러(258)를 연결하고, 작동 부재(260, 265)의 하부가 상기 롤러 연결 축(255, 257) 중 하측에 배치된 것(257)에 연결되고, 상기 작동 부재(260, 265)의 상부는 제 1 레그(251)에 연결된다.

[83] 본 실시예에서는, 승강력 조절 부재(266)가 상기 제 1 레그(251)로부터 일정 길이 돌출되고, 상기 승강력 조절 부재(266)의 말단부에 상기 작동 부재(260, 265)의 상부가 회동 가능하게 연결된다.

[84] 이하에서는 도면을 참조하여 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치에 대하여 설명한다.

[85] 도 9는 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블이 결합된 모습을 보이는 사시도이고, 도 10은 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블에서 테이블 패널이 분리된 모습을 전측 위에서 비스듬히 내려다본 사시도이고, 도 11은 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블이 분리된 모습을 보이는 사시도이고, 도 12는 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블을 정면에서 바라본 도면이고, 도 13은 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블이 수축된 모습을 정면에서 바라본 도면이고, 도 14는 도 10에 도시된 B 부분을 확대한 도면이고, 도 15는 도 14에 도시된 부분이 분해된 모습을 보이는 도면이고, 도 16은 도 11에 도시된 C 부분을 확대한 도면이고, 도 17은 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블에서 보조 테이블이 눕혀진 모습을 정면에서 바라본 도면이고, 도 18은 본 발명의 제 3 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블에서 테이블 패널이 분리된 모습을 후측 위에서 비스듬히 내려다본 사시도이고, 도 19는 도 18에 도시된 D 부분을 확대한 도면이다.

[86] 도 9 내지 도 19를 함께 참조하면 본 실시예에 따른 리프트 테이블용 승강 장치(300)는 하부 프레임(310)과, 상부 프레임(330)과, 레그 부재(350)와, 보조 장치 장착 부재를 포함한다.

[87] 또한, 상기 리프트 테이블용 승강 장치(300)는 리프트 테이블을 타 물체에 고정하기 위한 것으로서, 상기 하부 프레임(310)과, 상기 상부 프레임(330)과, 상기 레그 부재(350)와, 고정 부재를 포함한다.

[88] 또한, 상기 리프트 테이블용 승강 장치(300)는 롤러 부재(356, 358)와, 롤러 연결 축(355, 357)과, 작동 부재(360, 365)와, 보조 장치 연결 부재(370)를 포함한다.

[89] 상기 하부 프레임(310)은 상기 리프트 테이블용 승강 장치(300)의 하부 구조를 이루고, 상기 리프트 테이블용 승강 장치(300)가 설치되는 설치면에 직접 닿도록 놓이는 것이다.

[90] 상세히, 상기 하부 프레임(310)은 서로 평행하게 배치되는 한 쌍의 하부 측면체(311, 315)와, 상기 각 하부 측면체(311, 315)의 전방부를 서로 연결하는 하부 전방 연결체(320)와, 상기 각 하부 측면체(311, 315)의 후방부를 서로 연결하는 하부 후방 연결체(325)를 포함하여, 내부가 빈 사각형 형태로 이루어진다.

[91] 상기 각 하부 측면체(311, 315)의 전방부에는 후술되는 제 1 레그(351)의 하부가 일정 각도 범위에서 회전되는 회동이 가능하도록 연결되는 제 1 레그 연결부(312, 316)가 형성되고, 상기 각 하부 측면체(311, 315)의 서로 마주보는 면에는 각각 후술되는 제 2 레그(352)의 하부에 연결된 하부 롤러(358)가 회전되면서 이동될 수 있는 하부 롤러 이동홀(313, 317)이 형성된다.

[92] 상기 상부 프레임(330)은 상기 리프트 테이블용 승강 장치(300)의 상부 구조를 이루고, 상기 하부 프레임(310)에 대해 상대적으로 승강될 수 있고, 상기 상부 프레임(330)의 상단에 일정 면적으로 넓은 플레이트 형태의 테이블 패널(301)이 배치되는 것이다.

[93] 상세히, 상기 상부 프레임(330)은 서로 평행하게 배치되는 한 쌍의 상부 측면체(331, 335)와, 상기 각 상부 측면체(331, 335)의 전방부를 서로 연결하는 상부 전방 연결체(340)와, 상기 각 상부 측면체(331, 335)의 후방부를 서로 연결하는 상부 후방 연결체(345)를 포함하여, 내부가 빈 사각형 형태로 이루어진다.

[94] 상기 보조 장치 장착 부재는 상기 상부 프레임(330)에 보조 장치를 착탈 가능하게 연결할 수 있는 것으로, 본 실시예에서는 상기 상부 후방 연결체(345)가 상기 보조 장치 장착 부재가 되고, 그에 따라 상기 상부 후방 연결체(345)가 상기 상부 프레임(330)에 상기 보조 장치를 착탈 가능하게 연결한다.

[95] 상기 각 상부 측면체(331, 335)의 전방부에는 상기 제 2 레그(352)의 상부가 일정 각도 범위에서 회전되는 회동이 가능하도록 연결되는 제 2 레그 연결부(332, 336)가 형성되고, 상기 각 상부 측면체(331, 335)의 서로 마주보는 면에는 각각 상기 제 1 레그(351)의 상부에 연결된 상부 롤러(356)가 회전되면서 이동될 수 있는 상부 롤러 이동홀(333, 337)이 형성된다.

[96] 상기 레그 부재(350)는 상기 하부 프레임(310)과 상기 상부 프레임(330) 사이를 연결하되, 상기 하부 프레임(310)에 대한 상기 상부 프레임(330)의 상대적인 높이가 변경될 수 있도록 하는 것이다.

[97] 상세히, 상기 레그 부재(350)는 일정 길이의 바아 형태로 형성되는 상기 제 1 레그(351)와, 일정 길이의 바아 형태로 형성되고 상기 제 1 레그(351)와 교차되되 일정 각도 범위에서 회전되는 회동이 가능하게 연결되는 상기 제 2 레그(352)를 포함한다.

[98] 상기 제 1 레그(351)와 상기 제 2 레그(352)는 임의의 위치, 예를 들어 각 중앙부가 레그 회동축(353)을 중심으로 연결되어, 전체적으로 'X'자 형태로 교차되도록 형성될 수 있다.

[99] 상기 제 1 레그(351)의 하부와 상기 제 2 레그(352)의 상부가 가까워지고 상기 제 1 레그(351)의 상부와 상기 제 2 레그(352)의 하부가 가까워지도록 회동되면, 상기 레그 부재(350)의 높이는 낮아지게 되고, 그에 따라 상기 상부 프레임(330)이 상기 하부 프레임(310) 쪽으로 하강하게 된다.

[100] 반면, 상기 제 1 레그(351)의 하부와 상기 제 2 레그(352)의 상부가 멀어지고 상기 제 1 레그(351)의 상부와 상기 제 2 레그(352)의 하부가 멀어지도록 회동되면, 상기 레그 부재(350)의 높이는 높아지게 되고, 그에 따라 상기 상부 프레임(330)이 상기 하부 프레임(310) 쪽으로부터 상승하게 된다.

[101] 상기 레그 부재(350)는 상기 하부 프레임(310)과 상기 상부 프레임(330)의 양 측에 각각 하나씩 설치된다.

[102] 상기 롤러 부재(356, 358)는 상기 레그 부재(350)에 연결되어, 상기 레그 부재(350)의 회동에 따라, 상기 상부 프레임(330)의 승강 시에 상기 상부 프레임(330)과 상기 하부 프레임(310) 중 적어도 하나를 따라 이동될 수 있는 것이다.

[103] 상세히, 상기 롤러 부재(356, 358)는 상기 제 2 레그(352)의 하부에 회전 가능하게 연결되고 상기 하부 롤러 이동홀(313, 317)을 따라 이동될 수 있는 상기 하부 롤러(358)와, 상기 제 1 레그(351)의 상부에 회전 가능하게 연결되고 상기 상부 롤러 이동홀(333, 337)을 따라 이동될 수 있는 상기 상부 롤러(356)를 포함한다.

[104] 상기 하부 롤러(358)와 상기 상부 롤러(356)는 각각 한 쌍으로 구성되어, 각각 하나씩 상기 각 제 1 레그(351)와, 상기 각 제 2 레그(352)에 연결된다.

[105] 상기 롤러 연결 축(355, 357)은 상기 상부 프레임(330)과 상기 하부 프레임(310) 중 같은 프레임을 따라 이동되는 롤러의 쌍을 연결해주는 것이다. 즉, 상기 롤러 연결 축(355, 357) 중 상측에 배치된 것(355)은 상기 상부 프레임(330) 내부를 가로질러 한 쌍의 상기 상부 롤러(356)를 서로 연결해 주고, 상기 롤러 연결 축(355, 357) 중 하측에 배치된 것(357)은 상기 하부 프레임(310) 내부를 가로질러 한 쌍의 상기 하부 롤러(358)를 서로 연결해 준다.

[106] 상기 제 1 레그(351)의 하단부는 상기 하부 프레임(310)의 일 측 말단부인 상기 제 1 레그 연결부(312, 316)에 회동 가능하게 연결되고, 상기 제 1 레그(351)의 상단부는 상기 상부 프레임(330)의 승강 시에 상기 상부 롤러 이동홀(333, 337)을 따라 이동 가능하게 배치되고, 상기 제 1 레그(351)의 상단부는 상기 롤러 연결 축(355, 357) 중 상측에 배치된 것(355)에 연결되고, 상기 제 2 레그(352)의 상단부는 상기 상부 프레임(330)의 일 측 말단부인 상기 제 2 레그 연결부(332, 336)에 회동 가능하게 연결되고, 상기 제 2 레그(352)의 하단부는 상기 상부 프레임(330)의 승강 시에 상기 상기 하부 롤러 이동홀(313, 317)을 따라 이동 가능하게 배치되고, 상기 제 2 레그(352)의 하단부는 상기 롤러 연결 축(355, 357) 중 하측에 배치된 것(357)에 연결된다.

[107] 상기 각 롤러 연결 축(355, 357)에 의해 한 쌍의 상기 제 1 레그(351)의 상단부와

한 쌍의 상기 제 2 레그(352)의 하단부가 각각 서로 연결되고, 상기 각 롤러 연결 축(355, 357)의 각 말단에 한 쌍의 상기 상부 롤러(356)와 한 쌍의 상기 하부 롤러(358)가 각각 연결됨으로써, 상기 제 1 레그(351)와 상기 제 2 레그(352)가 매끄럽게 이동될 수 있음과 함께, 상기 하부 프레임(310)과 상기 상부 프레임(330)의 양 측에 각각 설치된 상기 각 레그 부재(350)가 서로 연동되면서 동작될 수 있어서, 상기 상부 프레임(330)의 승강이 보다 매끄럽게 이루어질 수 있다.

[108] 상기 작동 부재(360, 365)는 상기 상부 프레임(330)의 승강이 매끄럽게 이루어지도록 작동되되, 상기 작동 부재(360, 365)의 일 측 말단부는 상기 롤러 연결 축(355, 357) 중 하나에 연결되고, 상기 작동 부재(360, 365)의 타 측 말단부는 상기 레그 부재(350)를 구성하는 복수 개의 레그 중 상기 롤러 연결 축(355, 357)이 연결된 레그와 다른 레그에 연결되는 것이다.

[109] 상기 작동 부재(360, 365)는 가스 스프링(gas cylinder)과 유압 실린더 중 적어도 하나로 이루어진다.

[110] 본 실시예에서는, 상기 작동 부재(360, 365)의 상부가 상기 롤러 연결 축(355, 357) 중 상측에 배치된 것(355), 즉 상기 제 1 레그(351)의 상단부를 서로 연결한 것에 회동 가능하게 연결되고, 상기 작동 부재(360, 365)의 하부가 상기 제 1 레그(351)와 상기 제 2 레그(352)가 교차된 지점의 하측에서 상기 제 2 레그(352)에 회동 가능하게 연결된다. 예를 들어, 상기 작동 부재(360, 365)가 유압 실린더인 경우, 실린더 몸체가 상기 롤러 연결 축(355, 357) 중 상측에 배치된 것(355)에 연결되고, 피스톤이 상기 레그 부재(350)의 상기 제 2 레그(352)에 회동 가능하게 연결될 수 있다.

[111] 상기 롤러 연결 축(355, 357) 중 상측에 배치된 것(355)에는 고정 홈(355a)이 형성되고, 상기 작동 부재(360, 365)의 상부가 상기 롤러 연결 축(355, 357) 중 상측에 배치된 것(355)에 연결된 상태가 유지되도록, 상기 고정 홈(355a)에 고정 수단(355b)이 결합된다.

[112] 상기 고정 홈(355a)은 상기 작동 부재(360, 365)의 일 측 말단부가 연결되는 부분의 양 측에 각각 형성되고, 상기 각 고정 홈(355a)에 상기 고정 수단(355b)이 각각 결합된다.

[113] 상기 고정 수단(355b)은 C형 고정 링으로 제시될 수 있다.

[114] 이러한 상기 고정 홈(355a)과 상기 고정 수단(355b)에 대한 설명은 도시되지는 않았지만, 상기 롤러 연결 축(355, 357) 중 하측에 배치된 것(357)에도 동일하게 적용된다.

[115] 상기와 같이, 상기 롤러 연결 축(355, 357) 중 상측에 배치된 것(355)에 상기 작동 부재(360, 365)의 상부가 연결되고, 상기 작동 부재(360, 365)의 상부 양 측에 형성된 상기 각 고정 홈(355a)에 상기 고정 수단(355b)이 각각 결합됨으로써, 상기 롤러 연결 축(355, 357)에 상기 작동 부재(360, 365)의 상부가 회동 가능하게 연결되면서도, 상기 롤러 연결 축(355, 357)에서 상기 작동 부재(360, 365)의

상부가 이동되는 좌우 유동이 발생되지 않게 된다.

[116] 한편, 본 실시예에서는, 상기 리프트 테이블용 승강 장치(300)가 승강력 조절 부재(361, 366)를 포함한다.

[117] 상기 승강력 조절 부재(361, 366)는 상기 작동 부재(360, 365)의 일 측 말단부가 상기 제 2 레그(352)의 중앙선으로부터 상기 상부 프레임(330)과 상기 하부 프레임(310) 중 어느 하나의 방향으로 이격된(offset) 부분에 연결되도록, 상기 작동 부재(360, 365)의 하부와 상기 제 2 레그(352) 사이에 개입되어 상기 작동 부재(360, 365)의 하부와 상기 제 2 레그(352)를 연결하는 것이다.

[118] 상세히, 상기 승강력 조절 부재(361, 366)는 상기 제 2 레그(352)로부터 일정 길이 돌출되고, 상기 승강력 조절 부재(361, 366)의 말단부에 상기 작동 부재(360, 365)의 하부가 회동 가능하게 연결된다.

[119] 상기 승강력 조절 부재(361, 366)는 상기 제 2 레그(352)의 중앙선으로부터 수직으로 일정 길이 돌출된 것으로, 상기 승강력 조절 부재(361, 366)의 말단부에 상기 작동 부재(360, 365)의 하부가 회동 가능하게 연결됨으로써, 상기 작동 부재(360, 365)의 하부가 상기 제 2 레그(352)의 중앙선으로부터 이격된 부분에 연결될 수 있고, 그에 따라 상기 제 1 레그(351)와 상기 제 2 레그(352)가 근접되도록 접힌 상태에서도 상기 작동 부재(360, 365)의 승강력이 감소되는 것을 최소화시킬 수 있다.

[120] 도면 번호 305는 고정 레버로서, 상기 고정 레버(305)를 사용자가 손으로 움켜쥐면, 상기 리프트 테이블용 승강 장치(300)의 고정이 해제되어 승강 가능한 상태가 될 수 있고, 상기 고정 레버(305)를 놓으면, 상기 리프트 테이블용 승강 장치(300)가 다시 고정된다. 이러한 고정 레버(305)의 구체적인 구조는 본 발명의 범위 외의 것이면서 일반적인 것이므로, 여기서는 그 구체적인 도시 및 설명을 생략한다.

[121] 이하에서는 예시적으로, 상기 보조 장치로 보조 테이블(377)이 제시되나, 이에 국한되는 것이 아니고, 상기 보조 장치로 작업 지시판 등 다른 다양한 구조물들이 제시될 수 있다.

[122] 본 실시예에서는, 상기 보조 장치 장착 부재인 상기 상부 후방 연결체(345)에 상기 보조 장치 연결 부재(370)의 연결을 위해 일정 깊이로 함몰된 상측 착탈 홈(345a)이 형성된다.

[123] 상기 상측 착탈 홈(345a)은 상기 보조 장치 장착 부재 상에 둘레면을 따라 서로 이격되도록 복수 개가 형성될 수 있고, 상기 상부 후방 연결체(345)의 임의의 위치에 상기 보조 장치 연결 부재(370)가 연결될 수 있도록, 상기 상측 착탈 홈(345a)은 상기 상부 후방 연결체(345)의 길이 방향을 따라 일정 길이로 길게 형성될 수 있다.

[124] 바람직하게는, 상기 상부 후방 연결체(345)의 길이 방향으로 상기 상부 후방 연결체(345) 전체에 상기 상측 착탈 홈(345a)이 형성될 수 있다.

[125] 상기 보조 장치 연결 부재(370)는 상기 보조 장치 장착 부재와 상기 보조 장치를

연결하기 위한 것이다.

[126] 상기 보조 장치 연결 부재(370)는 상기 상부 후방 연결체(345)의 후방에서 상기 상측 착탈 홈(345a)을 착탈 가능하게 집을 수 있는 보조 장치 연결 착탈 집게 부재(371)와, 상기 보조 장치 연결 착탈 집게 부재(371)에서 후방으로 연장되어 상기 보조 테이블(377)과 얹혀져 연결되는 보조 연결체(375)를 포함한다.

[127] 상기 보조 장치 연결 착탈 집게 부재(371)는 착탈 집게 하체(372)와, 착탈 집게 상체(373)와, 착탈 집게 결합 수단(374)을 포함한다.

[128] 상기 착탈 집게 하체(372)는 복수 개의 상기 상측 착탈 홈(345a) 중 하나에 그 전방부가 삽입될 수 있는 것이다.

[129] 상기 착탈 집게 상체(373)는 상기 착탈 집게 하체(372)의 상측에서 상기 착탈 집게 하체(372)와 결합되되, 복수 개의 상기 상측 착탈 홈(345a) 중 다른 하나에 그 전방부가 삽입될 수 있는 것이다.

[130] 상기 착탈 집게 하체(372)와 상기 착탈 집게 상체(373)가 서로 다른 상측 착탈 홈(345a)에 각각 결합되되, 상기 착탈 집게 하체(372)와 상기 착탈 집게 상체(373)의 각 전방부의 연장선이 서로 수렴되도록 결합됨으로써, 상기 착탈 집게 하체(372)와 상기 착탈 집게 상체(373)가 상기 상부 후방 연결체(345)를 견고하게 집을 수 있게 된다.

[131] 상기 착탈 집게 결합 수단(374)은 상기 착탈 집게 하체(372)와 상기 착탈 집게 상체(373)를 착탈 가능하게 서로 결합시켜 주는 것으로, 육각 렌치 볼트 및 너트 등으로 구성되어, 상기 착탈 집게 하체(372)와 상기 착탈 집게 상체(373)가 서로 고정되도록 조여주거나, 상기 착탈 집게 하체(372)와 상기 착탈 집게 상체(373)가 서로 분리되도록 풀려질 수 있다.

[132] 상기 보조 연결체(375)는 상기 착탈 집게 결합 수단(374)에서 연장되되, 수직으로 굽혀진 형태를 이루고, 상기 보조 연결체(375)의 후방 상단에는 상기 보조 테이블(377)이 올려져 고정될 수 있는 지지체(376)가 형성된다. 그러면, 도 1 등에서와 같이, 상기 보조 테이블(377)이 상기 테이블 패널(301)의 후방에 수직으로 세워진 형태가 되어, 작업 지시판 등의 용도로 이용될 수 있다.

[133] 한편, 상기 상부 후방 연결체(345)는 상기 각 상부 측면체(331, 335)의 후방에 일정 각도 범위 내에서 회전되는 회동이 가능하게 연결된다. 그러면, 상기 보조 연결체(375)가 상기 각 상부 측면체(331, 335)에 대해 수직으로 세워지면, 도 1 등에 서와 같이, 상기 보조 테이블(377)이 상기 테이블 패널(301)에 대해 수직으로 세워지게 되어, 작업 지시판 등의 용도로 이용될 수 있고, 상기 보조 연결체(375)가 대략 90°정도 회전되어, 상기 상부 후방 연결체(345)가 상기 각 상부 측면체(331, 335)에 대해 평행하게 눕혀지면, 도 9에 도시된 바와 같이, 상기 보조 테이블(377)이 상기 테이블 패널(301)의 연장선 상에 놓이게 되어, 상기 보조 테이블(377)이 상기 테이블 패널(301)의 테이블 면적을 확장하는 용도로 이용될 수 있게 된다.

[134] 상기 고정 부재는 상기 리프트 테이블이 상기 타 물체에 고정되도록 하는

것으로, 본 실시예에서는 상기 하부 후방 연결체(325)가 상기 고정 부재가 되고, 그에 따라 상기 하부 후방 연결체(325)가 상기 리프트 테이블을 상기 타 물체에 착탈 가능하게 고정시킨다.

[135] 상기 고정 부재에는 상기 고정 부재의 연결을 위해 일정 깊이로 함몰된 하측 착탈 홈(325a)이 형성된다.

[136] 본 실시예에서는, 예시적으로 상기 보조 장치 장착 부재가 상기 상부 프레임(330)을 구성하고, 상기 고정 부재가 상기 하부 프레임(310)을 구성하는 것으로 하여 설명한다.

[137] 상기 하측 착탈 홈(325a)은 상기 고정 부재인 상기 하부 후방 연결체(325) 상에 서로 이격되도록 복수 개 형성될 수 있고, 상기 하부 후방 연결체(325)의 임의의 위치에 상기 타 물체가 연결될 수 있도록, 상기 하측 착탈 홈(325a)은 상기 하부 후방 연결체(325)의 길이 방향을 따라 일정 길이로 길게 형성될 수 있다.

[138] 바람직하게는, 상기 고정 부재의 길이 방향으로 상기 고정 부재 전체에 상기 하측 착탈 홈(325a)이 형성될 수 있다.

[139] 상기 리프트 테이블용 승강 장치(300)는 상기 고정 부재와 상기 타 물체를 연결하기 위한 고정 연결 부재(380)를 더 포함한다.

[140] 상기 고정 연결 부재(380)는 상기 하부 후방 연결체(325)의 후방에서 상기 하측 착탈 홈(325a)을 착탈 가능하게 집을 수 있는 고정 착탈 집게 부재(381)와, 상기 고정 착탈 집게 부재(381)에서 연장되어 상기 타 물체의 일정 부분에 결합되는 고정 연결체(385)를 포함한다.

[141] 상기 고정 착탈 집게 부재(381)는 고정 착탈 집게 하체(382)와, 고정 착탈 집게 상체(383)와, 고정 착탈 집게 결합 수단(384)을 포함한다.

[142] 상기 고정 착탈 집게 하체(382)는 복수 개의 상기 하측 착탈 홈(325a) 중 하나에 그 전방부가 삽입될 수 있는 것이다.

[143] 상기 고정 착탈 집게 상체(383)는 상기 고정 착탈 집게 하체(382)의 상측에서 상기 고정 착탈 집게 하체(382)와 결합되되, 복수 개의 상기 하측 착탈 홈(325a) 중 다른 하나에 그 전방부가 삽입될 수 있는 것이다.

[144] 상기 고정 착탈 집게 하체(382)와 상기 고정 착탈 집게 상체(383)가 서로 다른 하측 착탈 홈(325a)에 각각 결합되되, 상기 고정 착탈 집게 하체(382)와 상기 고정 착탈 집게 상체(383)의 각 전방부의 연장선이 서로 수렴되도록 결합됨으로써, 상기 고정 착탈 집게 하체(382)와 상기 고정 착탈 집게 상체(383)가 상기 하부 후방 연결체(325)를 견고하게 집을 수 있게 된다.

[145] 상기 고정 착탈 집게 결합 수단(384)은 상기 고정 착탈 집게 하체(382)와 상기 고정 착탈 집게 상체(383)를 착탈 가능하게 서로 결합시켜 주는 것으로, 육각 렌치 볼트 및 너트 등으로 구성되어, 상기 고정 착탈 집게 하체(382)와 상기 고정 착탈 집게 상체(383)가 서로 고정되도록 조여주거나, 상기 고정 착탈 집게 하체(382)와 상기 고정 착탈 집게 상체(383)가 서로 분리되도록 풀려질 수 있다.

[146] 상기 고정 연결 부재(380)는 상기 고정 부재인 상기 하부 후방 연결체(325) 상에

서로 이격되도록 복수 개가 착탈 가능하게 연결될 수 있고, 상기 각 고정 연결체(385)는 상기 하부 후방 연결체(325)의 후방으로 일정 길이 돌출된 형태로 이루어질 수 있다.

[147] 상기와 같이 형성된 상기 각 고정 연결체(385)가 상기 타 물체의 일정 부분에 삽입되거나 조여지는 등의 방식으로 결합됨으로써, 상기 리프트 테이블이 간편하고 착탈 가능하게 상기 타 물체에 고정될 수 있게 된다.

[148] 이하에서는 도면을 참조하여 본 실시예에 따른 리프트 테이블용 승강 장치(300)의 작동에 대하여 설명한다.

[149] 먼저, 사용자가 상기 고정 레버(305)를 잡고 손으로 움켜쥐어 상기 리프트 테이블용 승강 장치(300)의 고정이 해제된 상태에서, 사용자가 상기 리프트 테이블용 승강 장치(300)를 누르면, 상기 제 1 레그(351)와 상기 제 2 레그(352)의 양 말단이 서로 근접되도록 상기 하부 롤러(358)와 상기 상부 롤러(356)가 각각 상기 하부 프레임(310)과 상기 상부 프레임(330)의 후방부로 이동된다. 그러면, 상기 레그 부재(350)의 높이가 점차 낮아지고, 그에 따라 상기 상부 프레임(330)이 하강된다.

[150] 한편, 사용자가 상기 리프트 테이블용 승강 장치(300)를 들어올리면, 상기 제 1 레그(351)와 상기 제 2 레그(352)의 양 말단이 서로 멀어지도록 상기 하부 롤러(358)와 상기 상부 롤러(356)가 각각 상기 하부 프레임(310)과 상기 상부 프레임(330)의 전방부로 이동된다. 그러면, 상기 레그 부재(350)의 높이가 점차 높아지고, 그에 따라 상기 상부 프레임(330)이 상승된다.

[151] 이러한 상기 상부 프레임(330)의 승강 중에 상기 작동 부재(360, 365)에 의해 상기 상부 프레임(330)이 매끄럽게 승강될 수 있다.

[152] 한편, 이러한 승강 작동과 별도로, 상기 보조 연결체(375)가 상기 각 상부 측면체(331, 335)에 대해 수직으로 세워져서, 작업 지시판 등의 용도로 이용되거나, 상기 보조 연결체(375)가 평행하게 눕혀져서, 상기 보조 테이블(377)이 상기 테이블 패널(301)의 테이블 면적을 확장하는 용도로 이용될 수 있다.

[153] 상기와 같은 상기 리프트 테이블의 승강 작동은 상기 고정 부재 및 상기 고정 연결 부재(370)에 의해 상기 타 물체에 고정된 상태로 이루어질 수도 있다.

[154] 상기 작동 부재(360, 365)의 일 측 말단부가 상기 롤러 연결 축(355, 357)에 연결되고, 상기 작동 부재(360, 365)의 타 측 말단부가 상기 레그 부재(350)를 구성하는 복수 개의 레그 중 상기 롤러 연결 축(355, 357)이 연결된 레그와 다른 레그에 연결됨으로써, 상기 리프트 테이블용 승강 장치(300)에서 롤러의 연결을 위해 필수적으로 존재하여야 하는 상기 롤러 연결 축(355, 357)에 상기 작동 부재(360, 365)의 일 측 말단부가 연결될 수 있으므로, 상기 작동 부재(360, 365)의 일 측 말단부의 연결을 위한 구조물이 상기 롤러 연결 축(355, 357)으로 대체될 수 있고, 그에 따라 상기 작동 부재(360, 365)의 연결을 위한 구조물이 최소화된 간명한 구조가 이루어질 수 있게 된다.

[155] 상기 보조 장치 장착 부재와 상기 보조 장치 연결 부재(370)가 구비됨에 따라, 리프트 테이블에 보조 테이블, 작업 지시판 등의 보조 장치를 일체성 있게 추가 부착할 수 있고, 그러한 보조 장치를 간편하게 착탈 및 교체시킬 수 있으며, 부착된 보조 장치를 세우거나 눕혀서 다양한 용도로 간편하게 전환하여 사용할 수 있다.

[156] 상기와 같이, 상기 리프트 테이블용 승강 장치(300)가 상기 하부 프레임(310), 상기 상부 프레임(330) 및 상기 레그 부재(350)와 함께, 상기 고정 부재를 포함함에 따라, 상기 고정 부재에 상기 타 물체가 착탈 가능하게 결합됨으로써, 상기 리프트 테이블을 상기 타 물체에 착탈 가능하게 간편하게 고정시킬 수 있게 된다.

[157] 이하에서는 도면을 참조하여 본 발명의 제 4 실시예에 따른 리프트 테이블용 승강 장치에 대하여 설명한다.

[158] 도 20은 본 발명의 제 2 실시예에 따른 리프트 테이블용 승강 장치가 적용된 리프트 테이블을 정면에서 바라본 도면이다.

[159] 도 20을 참조하면, 본 실시예에서는, 보조 장치 장착 부재인 상부 후방 연결체(445)에서 보조 장치 연결 부재(470)가 수직으로 세워진 형태가 되고, 상기 보조 장치 연결 부재(470)의 상부에서 전방으로 테이블 패널의 상공에 상기 테이블 패널과 평행하게 보조 테이블(477)이 놓인 형태가 된다. 그러면, 상기 테이블 패널의 후측 상공에 상기 보조 테이블(477)이 2단 테이블 형태로 배치될 수 있게 된다.

[160] 상기에서 본 발명은 특정한 실시 예에 관하여 도시되고 설명되었지만, 당업계에서 통상의 지식을 가진 자라면 이하의 특허청구범위에 기재된 본 발명의 사상 및 영역을 벗어나지 않는 범위 내에서 본 발명을 다양하게 수정 및 변경시킬 수 있음을 알 수 있을 것이다. 그렇지만 이러한 수정 및 변형 구조들은 모두 본 발명의 권리범위 내에 포함되는 것임을 분명하게 밝혀두고자 한다.

산업상 이용가능성

[161] 본 발명의 일 측면에 따른 리프트 테이블용 승강 장치에 의하면, 가스 스프링, 유압 실린더 등의 작동 부재를 연결하기 위한 구조물이 최소화된 간명한 구조를 이룰 수 있음과 함께, 리프트 테이블에 보조 장치를 일체성있게 추가 부착할 수 있고, 리프트 테이블을 타 물체에 착탈 가능하게 고정시킬 수 있으므로, 그 산업상 이용가능성이 높다고 하겠다.

청구범위

[청구항 1] 설치면에 놓이는 하부 프레임;
상기 하부 프레임에 대해 상대적으로 승강될 수 있는 상부 프레임;
상기 하부 프레임과 상기 상부 프레임 사이를 연결하되, 상기 하부 프레임에 대한 상기 상부 프레임의 상대적인 높이가 변경될 수 있도록 하는 레그 부재;
상기 레그 부재에 연결되어, 상기 레그 부재의 회동에 따라, 상기 상부 프레임의 승강 시에 상기 상부 프레임과 상기 하부 프레임 중 적어도 하나를 따라 이동될 수 있는 롤러 부재;
상기 상부 프레임과 상기 하부 프레임 중 같은 프레임을 따라 이동되고 상기 롤러 부재를 구성하는 롤러의 쌍을 연결해주는 롤러 연결 축; 및
상기 상부 프레임의 승강이 매끄럽게 이루어지도록 작동되되, 그 일 측 말단부는 상기 롤러 연결 축에 연결되고, 그 타 측 말단부는 상기 레그 부재를 구성하는 복수 개의 레그 중 상기 롤러 연결 축이 연결된 레그와 다른 레그에 연결되는 작동 부재;를 포함하는 리프트 테이블용 승강 장치.

[청구항 2] 제 1 항에 있어서,
상기 롤러 연결 축에 의해 연결된 롤러 중 상기 상부 프레임을 따라 이동되는 한 쌍의 상부 롤러는 상기 상부 프레임 중 서로 마주보는 각 측면부를 따라 이동되도록 설치되고,
상기 롤러 연결 축은 상기 상부 프레임 내부를 가로질러 상기 각 상부 롤러를 연결하고,
상기 레그 부재는 제 1 레그와, 상기 제 1 레그와 교차되되 회동 가능하게 연결되는 제 2 레그를 포함하고,
상기 제 1 레그의 하단부는 상기 하부 프레임의 일 측 말단부에 회동 가능하게 연결되고, 상기 제 1 레그의 상단부는 상기 롤러 연결 축에 연결되고,
상기 제 2 레그의 상단부는 상기 상부 프레임의 일 측 말단부에 회동 가능하게 연결되고, 상기 제 2 레그의 하단부는 상기 상부 프레임의 승강 시에 상기 하부 프레임을 따라 이동 가능하게 배치되고,
상기 작동 부재의 일 측 말단부는 상기 롤러 연결 축에 연결되고, 상기 작동 부재의 타 측 말단부는 상기 제 2 레그에 연결되는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 3] 제 1 항에 있어서,
상기 롤러 연결 축에는 고정 홈이 형성되고,
상기 작동 부재의 일 측 말단부가 상기 롤러 연결 축에 연결된 상태가 유지되도록, 상기 고정 홈에 고정 수단이 결합되는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 4] 제 3 항에 있어서,
상기 고정 홈은 상기 작동 부재의 일 측 말단부가 연결되는 부분의 양 측에 각각 형성되고, 상기 각 고정 홈에 상기 고정 수단이 각각 결합되는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 5] 제 3 항에 있어서,
상기 고정 수단은 C형 고정 링인 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 6] 제 4 항에 있어서,
상기 고정 수단은 C형 고정 링인 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 7] 제 1 항에 있어서,
상기 롤러 연결 축에 의해 연결된 롤러 중 상기 하부 프레임을 따라 이동되는 한 쌍의 하부 롤러는 상기 하부 프레임 중 서로 마주보는 각 측면부를 따라 이동되도록 설치되고,
상기 롤러 연결 축은 상기 하부 프레임 내부를 가로질러 상기 각 하부 롤러를 연결하고,
상기 레그 부재는 제 1 레그와, 상기 제 1 레그와 교차되되 회동 가능하게 연결되는 제 2 레그를 포함하고,
상기 제 1 레그의 하단부는 상기 하부 프레임의 일 측 말단부에 회동 가능하게 연결되고, 상기 제 1 레그의 상단부는 상기 상부 프레임의 승강 시에 상기 상부 프레임을 따라 이동 가능하게 배치되고,
상기 제 2 레그의 상단부는 상기 상부 프레임의 일 측 말단부에 회동 가능하게 연결되고, 상기 제 2 레그의 하단부는 상기 롤러 연결 축에 연결되고,
상기 작동 부재의 일 측 말단부는 상기 롤러 연결 축에 연결되고, 상기 작동 부재의 타 측 말단부는 상기 제 1 레그에 연결되는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 8] 제 2 항에 있어서,
상기 리프트 테이블용 승강 장치는
상기 작동 부재의 일 측 말단부가 상기 제 1 레그 또는 상기 제 2 레그의 중앙선으로부터 상기 상부 프레임과 상기 하부 프레임 중 어느 하나의 방향으로 이격된(offset) 부분에 연결되도록, 상기 작동 부재의 일 측 말단부와 상기 제 1 레그 또는 상기 제 2 레그 사이에 개입되어 상기 작동 부재의 일 측 말단부와 상기 제 1 레그 또는 상기 제 2 레그를 연결하는 승강력 조절 부재;를 포함하는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 9] 제 6 항에 있어서,
상기 리프트 테이블용 승강 장치는

상기 작동 부재의 일 측 말단부가 상기 제 1 레그 또는 상기 제 2 레그의 중앙선으로부터 상기 상부 프레임과 상기 하부 프레임 중 어느 하나의 방향으로 이격된(offset) 부분에 연결되도록, 상기 작동 부재의 일 측 말단부와 상기 제 1 레그 또는 상기 제 2 레그 사이에 개입되어 상기 작동 부재의 일 측 말단부와 상기 제 1 레그 또는 상기 제 2 레그를 연결하는 승강력 조절 부재;를 포함하는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 10] 제 7 항에 있어서,
상기 승강력 조절 부재는
상기 제 1 레그 또는 상기 제 2 레그로부터 일정 길이 돌출되고, 그 말단부에 상기 작동 부재의 일 측 말단부가 회동 가능하게 연결되는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 11] 제 1 항에 있어서,
상기 작동 부재는 가스 스프링(gas cylinder)과 유압 실린더 중 적어도 하나인 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 12] 설치면에 놓이는 하부 프레임;
상기 하부 프레임에 대해 상대적으로 승강될 수 있는 상부 프레임;
상기 하부 프레임과 상기 상부 프레임 사이를 연결하되, 상기 하부 프레임에 대한 상기 상부 프레임의 상대적인 높이가 변경될 수 있도록 하는 레그 부재; 및
상기 상부 프레임에 보조 장치를 착탈 가능하게 연결할 수 있는 보조 장치 장착 부재;를 포함하는 리프트 테이블용 승강 장치.

[청구항 13] 제 12 항에 있어서,
상기 상부 프레임은
서로 평행하게 배치되는 한 쌍의 상부 측면체와,
상기 각 상부 측면체의 전방을 서로 연결하는 상부 전방 연결체와,
상기 각 상부 측면체의 후방을 서로 연결하는 상부 후방 연결체를 포함하고,
상기 상부 후방 연결체가 상기 보조 장치 장착 부재인 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 14] 제 13 항에 있어서,
상기 보조 장치 장착 부재에는 상기 보조 장치의 연결을 위해 일정 깊이로 함몰된 상측 착탈 홈이 형성되는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 15] 제 14 항에 있어서,
상기 리프트 테이블용 승강 장치는
상기 보조 장치 장착 부재와 상기 보조 장치를 연결하기 위한 보조 장치 연결 부재;를 더 포함하고,

상기 보조 장치 연결 부재는
상기 상측 착탈 홈을 착탈 가능하게 집을 수 있는 보조 장치 연결 착탈 집게 부재와,
상기 보조 장치 연결 착탈 집게 부재에서 연장되어 보조 장치와 연결되는 보조 연결체를 포함하는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 16] 제 15 항에 있어서,
상기 상측 착탈 홈은 상기 보조 장치 장착 부재 상에 둘레면을 따라 서로 이격되도록 복수 개가 형성되고,
상기 보조 장치 연결 착탈 집게 부재는
복수 개의 상기 상측 착탈 홈 중 하나에 그 전방부가 삽입될 수 있는 착탈 집게 하체와,
상기 착탈 집게 하체의 상측에서 상기 착탈 집게 하체와 결합되되, 복수 개의 상기 상측 착탈 홈 중 다른 하나에 그 전방부가 삽입될 수 있는 착탈 집게 상체와,
상기 착탈 집게 하체와 상기 착탈 집게 상체를 착탈 가능하게 서로 결합시켜 주는 착탈 집게 결합 수단을 포함하는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 17] 제 16 항에 있어서,
상기 보조 연결체에 보조 테이블이 얹혀지는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 18] 제 17 항에 있어서,
상기 보조 연결체가 상기 각 상부 측면체에 대해 수직으로 세워지면, 상기 보조 테이블이 상기 테이블 패널에 대해 수직으로 세워지게 되고,
상기 보조 연결체가 상기 각 상부 측면체에 대해 평행하게 눕혀지면, 상기 보조 테이블이 상기 테이블 패널의 연장선 상에 놓이게 되는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 19] 제 14 항에 있어서,
상기 보조 장치 장착 부재의 임의의 위치에 상기 보조 장치가 연결될 수 있도록, 상기 상측 착탈 홈은 상기 보조 장치 장착 부재의 길이 방향을 따라 일정 길이로 길게 형성되는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 20] 리프트 테이블을 타 물체에 고정하기 위한 것으로서,
설치면에 놓이는 하부 프레임;
상기 하부 프레임에 대해 상대적으로 승강될 수 있는 상부 프레임;
상기 하부 프레임과 상기 상부 프레임 사이를 연결하되, 상기 하부 프레임에 대한 상기 상부 프레임의 상대적인 높이가 변경될 수 있도록 하는 레그 부재; 및
상기 리프트 테이블이 상기 타 물체에 고정되도록 하는 고정 부재;를

포함하는 리프트 테이블용 승강 장치.

[청구항 21] 제 20 항에 있어서,
상기 하부 프레임은
서로 평행하게 배치되는 한 쌍의 하부 측면체와,
상기 각 하부 측면체의 전방을 서로 연결하는 하부 전방 연결체와,
상기 각 하부 측면체의 후방을 서로 연결하는 하부 후방 연결체를 포함하고,
상기 하부 후방 연결체가 상기 고정 부재인 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 22] 제 21 항에 있어서,
상기 고정 부재에는 상기 타 물체의 연결을 위해 일정 깊이로 함몰된 하측 착탈 홈이 형성되는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 23] 제 22 항에 있어서,
상기 리프트 테이블용 승강 장치는
상기 고정 부재와 상기 타 물체를 연결하기 위한 고정 연결 부재;를 더 포함하고,
상기 고정 연결 부재는
상기 하측 착탈 홈을 착탈 가능하게 집을 수 있는 고정 착탈 집게 부재와,
상기 고정 착탈 집게 부재에서 연장되어 상기 타 물체의 일정 부분에 결합되는 고정 연결체를 포함하는 것을 특징으로 하는 리프트 테이블용 승강 장치.

[청구항 24] 제 23 항에 있어서,
상기 하측 착탈 홈은 상기 고정 부재 상에 둘레면을 따라 서로 이격되도록 복수 개가 형성되고,
상기 고정 착탈 집게 부재는
복수 개의 상기 하측 착탈 홈 중 하나에 그 전방부가 삽입될 수 있는 고정 착탈 집게 하체와,
상기 고정 착탈 집게 하체의 상측에서 상기 고정 착탈 집게 하체와 결합되되, 복수 개의 상기 하측 착탈 홈 중 다른 하나에 그 전방부가 삽입될 수 있는 고정 착탈 집게 상체와,
상기 고정 착탈 집게 하체와 상기 고정 착탈 집게 상체를 착탈 가능하게 서로 결합시켜 주는 고정 착탈 집게 결합 수단을 포함하는 것을 특징으로 하는 리프트 테이블용 승강 장치.

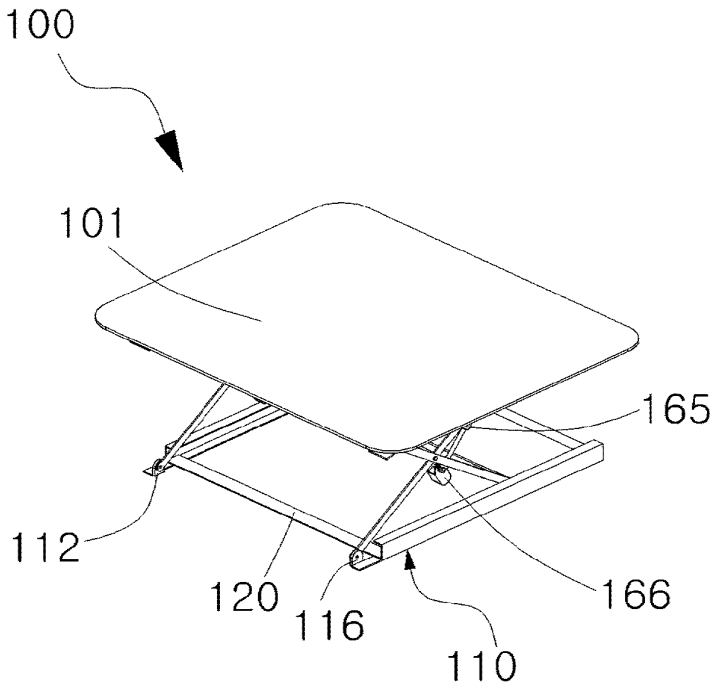
[청구항 25] 설치면에 놓이는 하부 프레임;
상기 하부 프레임에 대해 상대적으로 승강될 수 있는 상부 프레임;
상기 하부 프레임과 상기 상부 프레임 사이를 연결하되, 상기 하부 프레임에 대한 상기 상부 프레임의 상대적인 높이가 변경될 수 있도록 하는 레그 부재;

상기 상부 프레임에 보조 장치를 착탈 가능하게 연결할 수 있는 보조 장치 장착 부재; 및

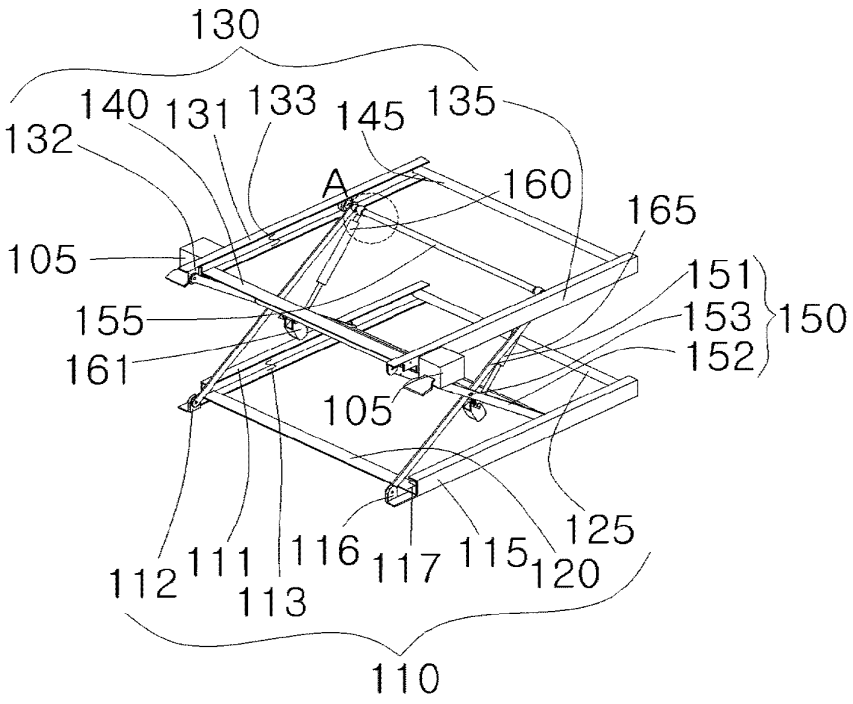
리프트 테이블이 타 물체에 고정되도록 하는 고정 부재;를 포함하는

리프트 테이블용 승강 장치.

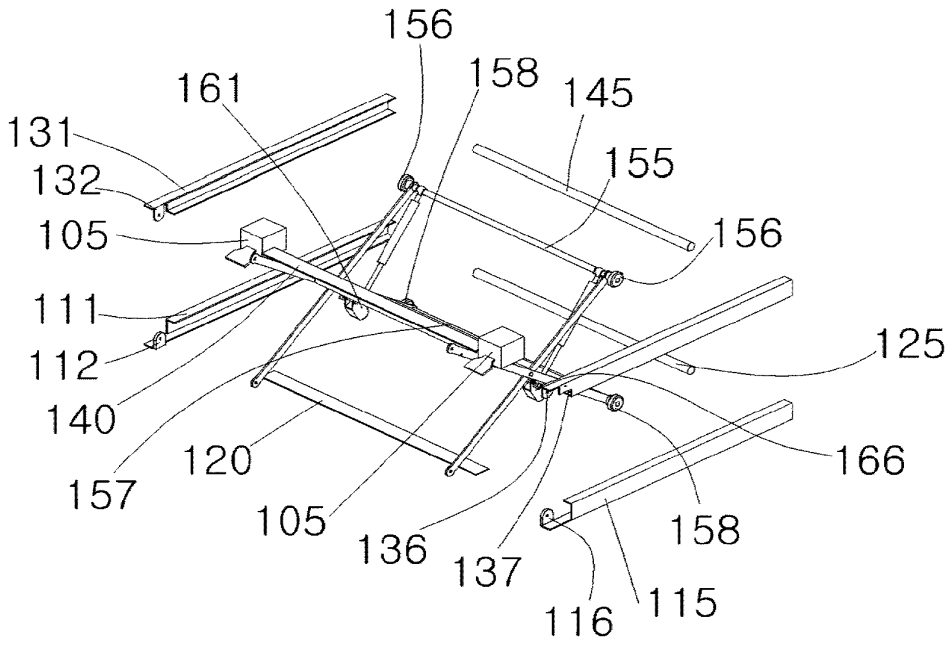
[도1]



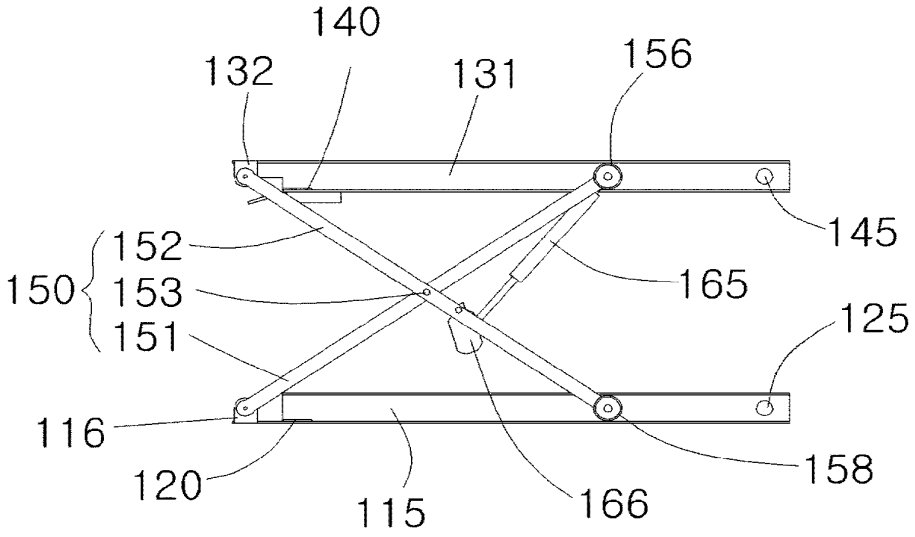
[도2]


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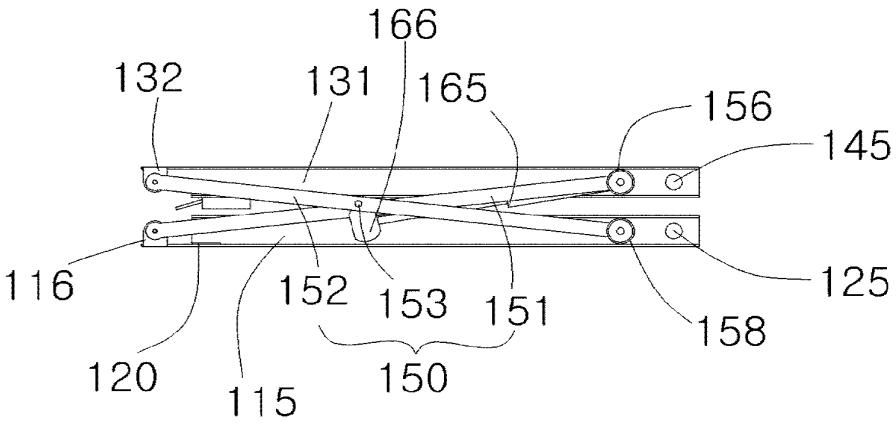
[도3]


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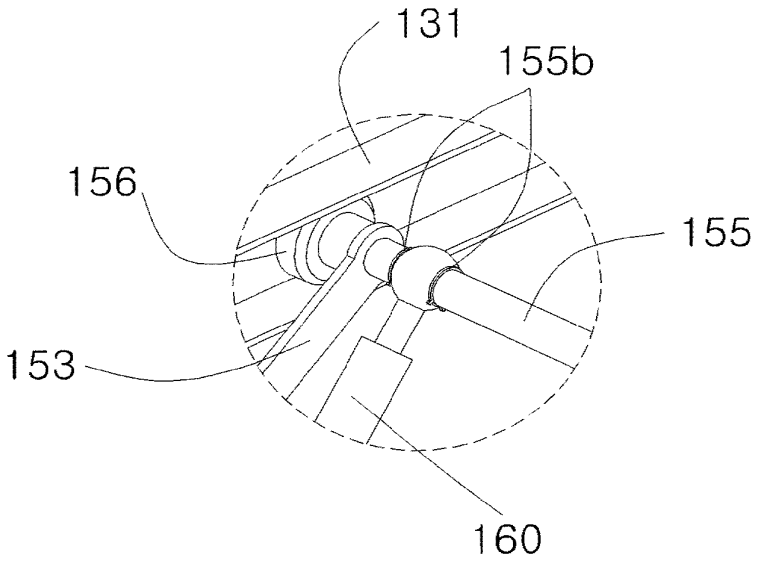
[도4]



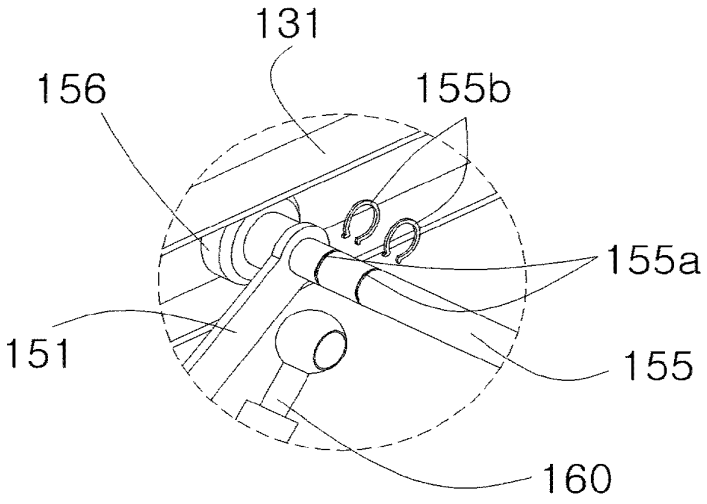
[도5]



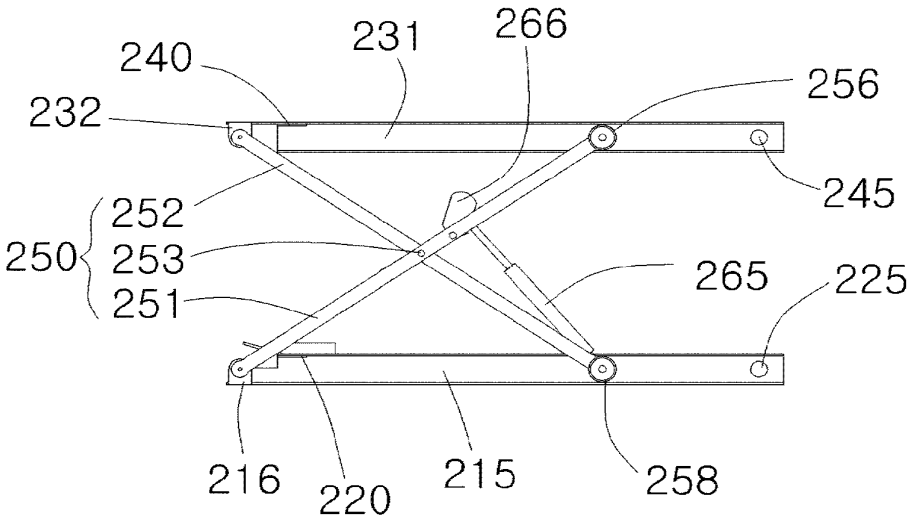
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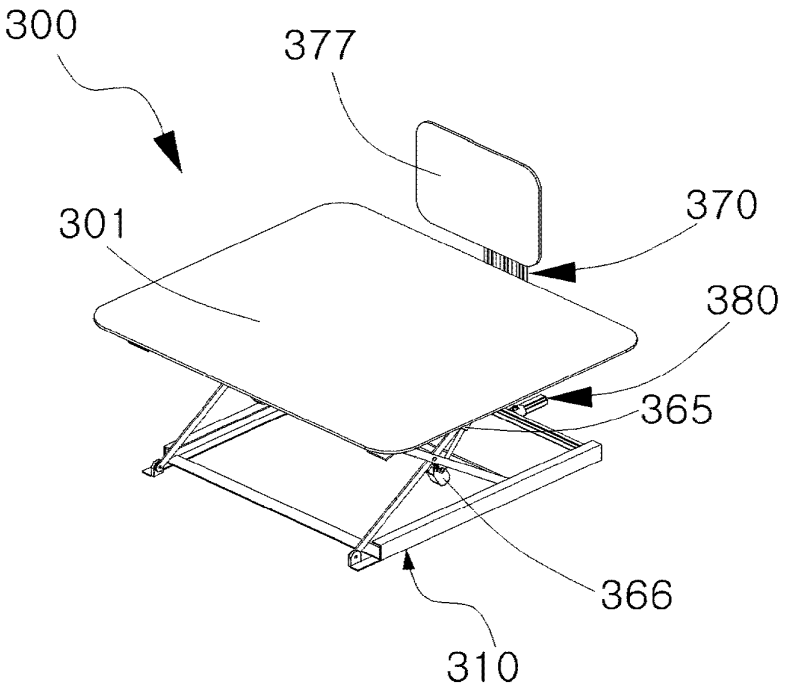
[도7]



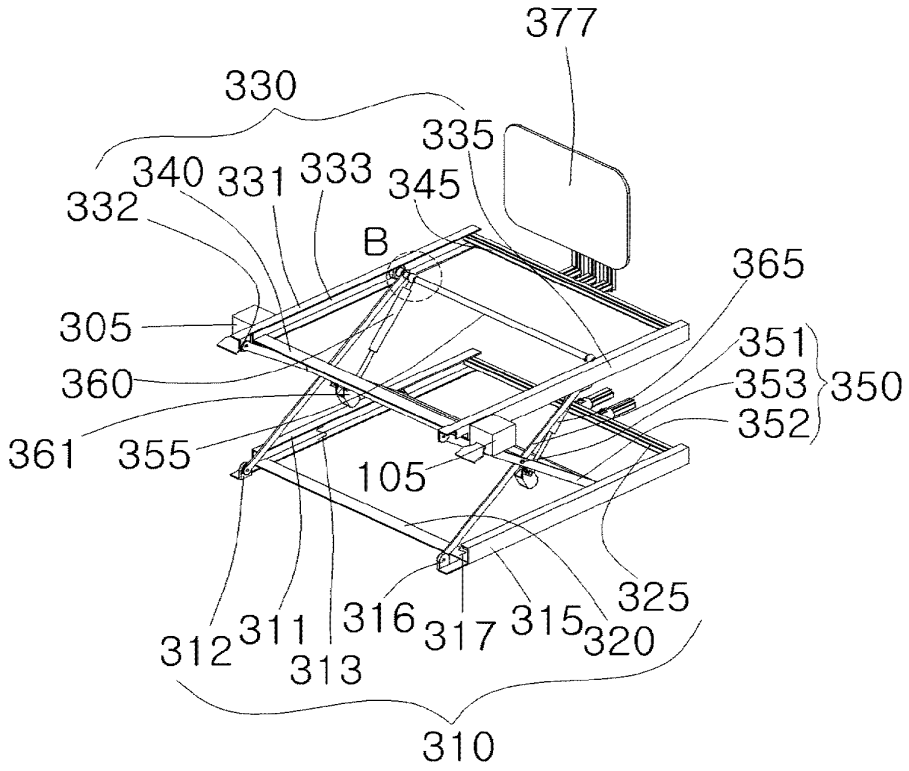
[도8]



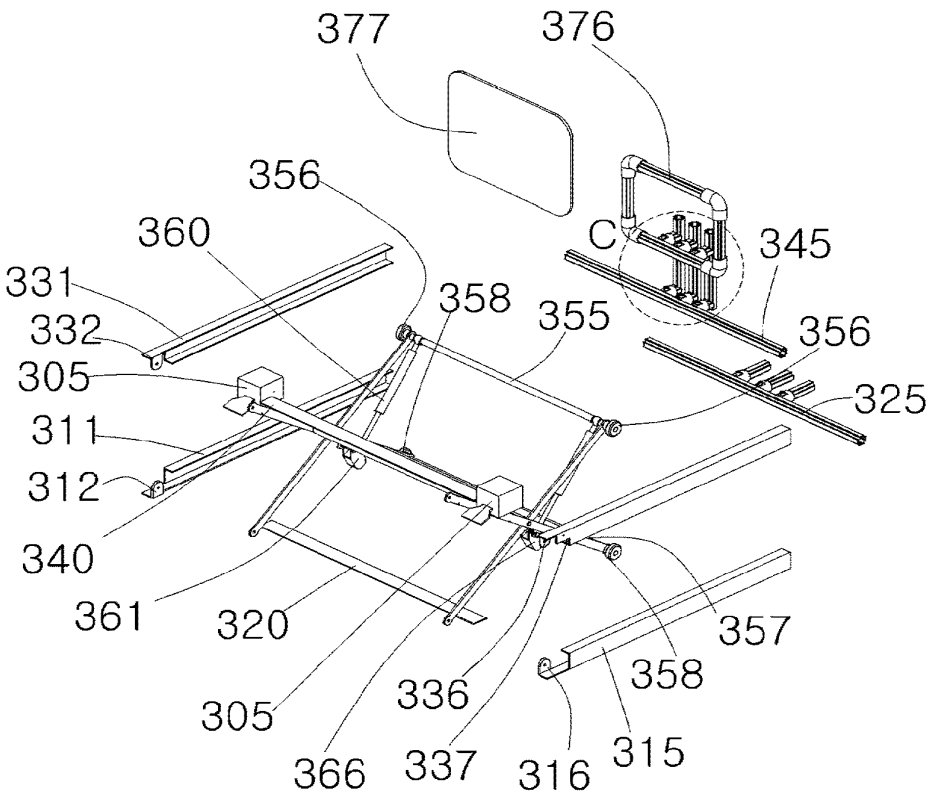
[도9]



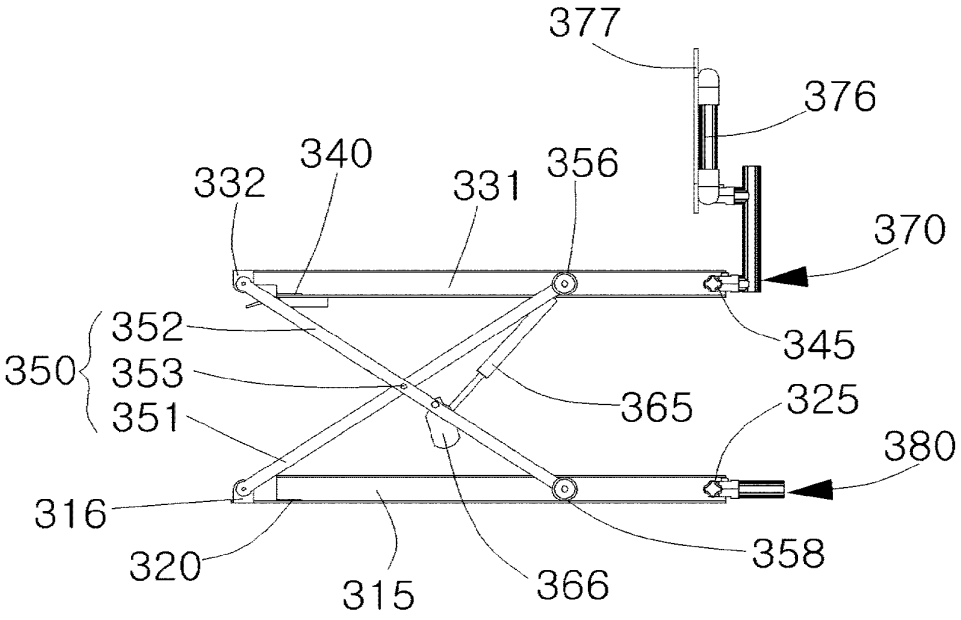
[도10]


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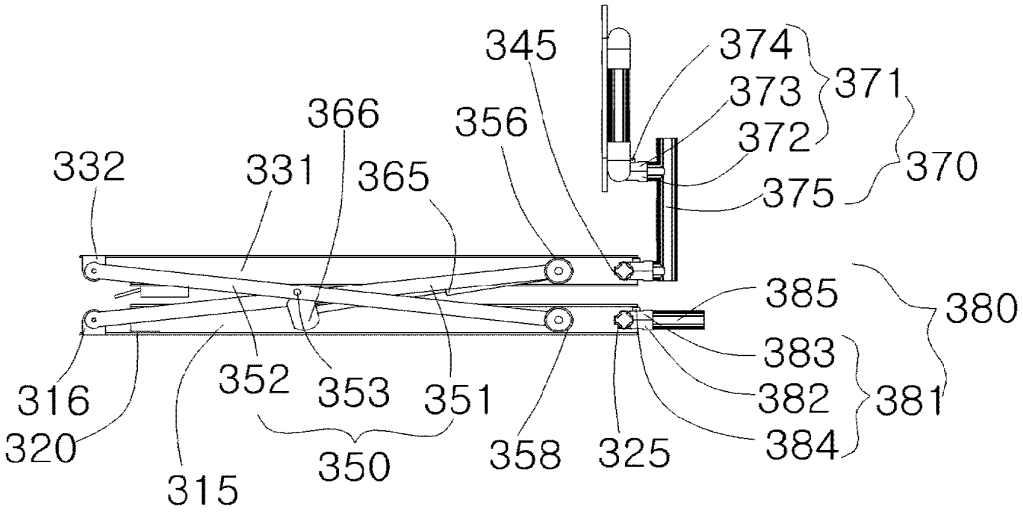
[도11]


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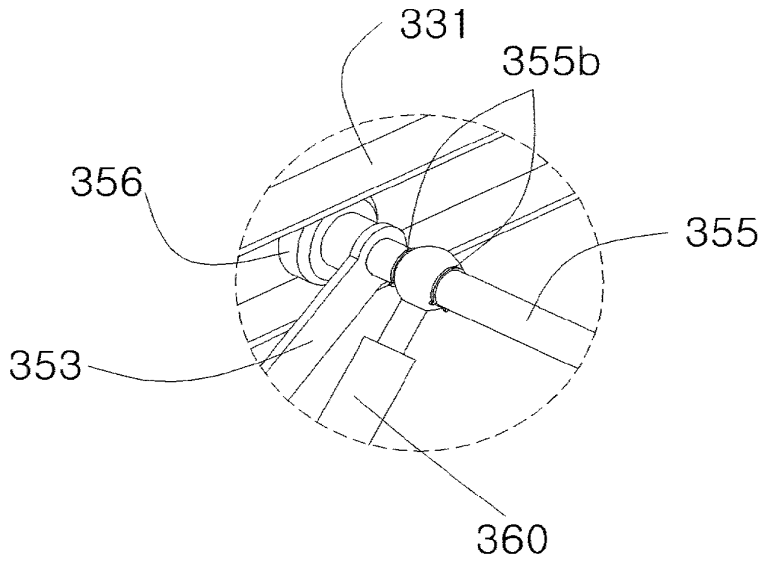
[도12]


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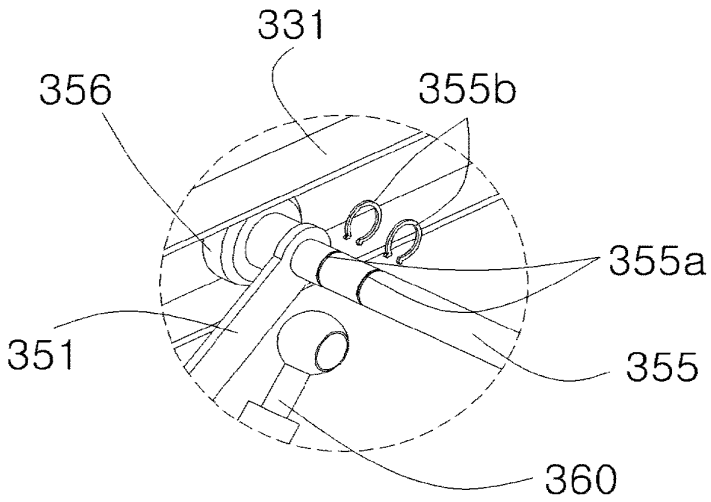
[도13]


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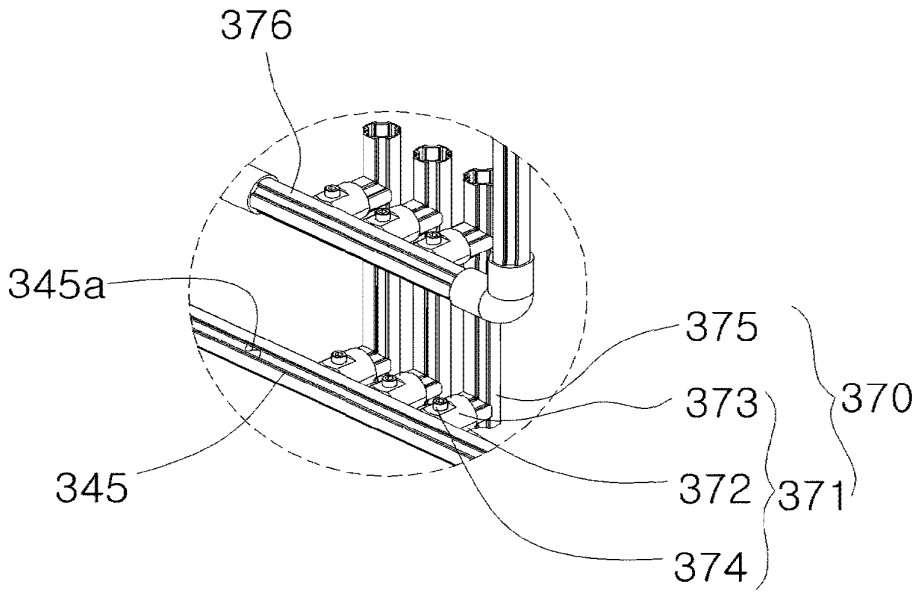
[도14]



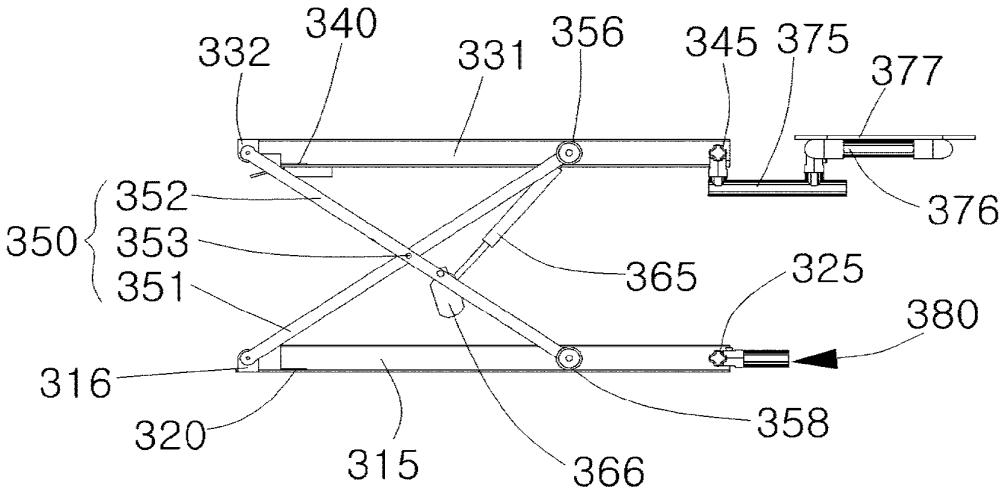
[도15]



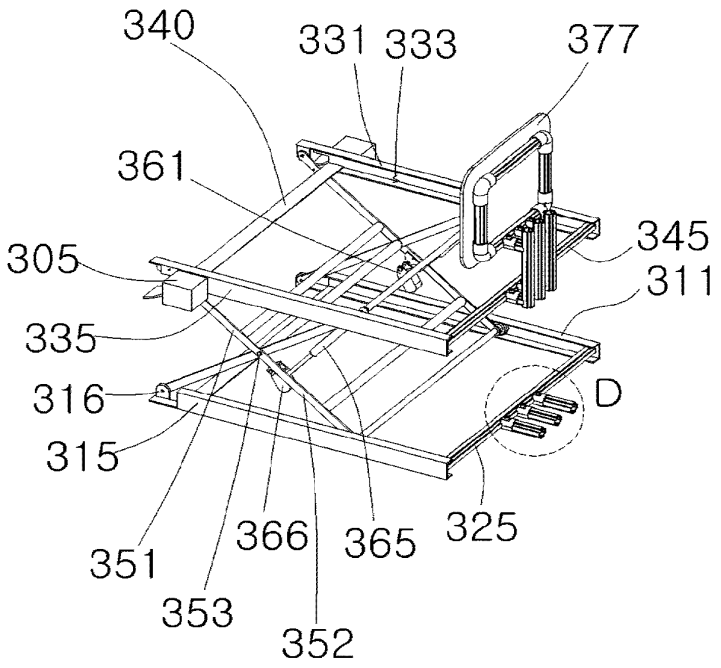
[도16]



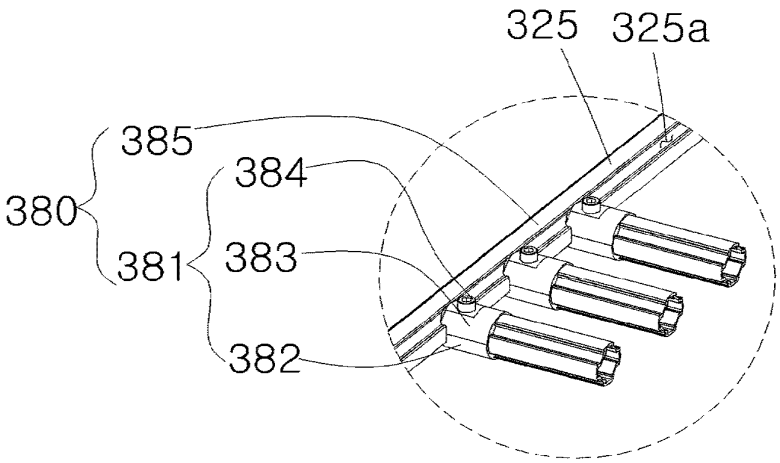
[도17]


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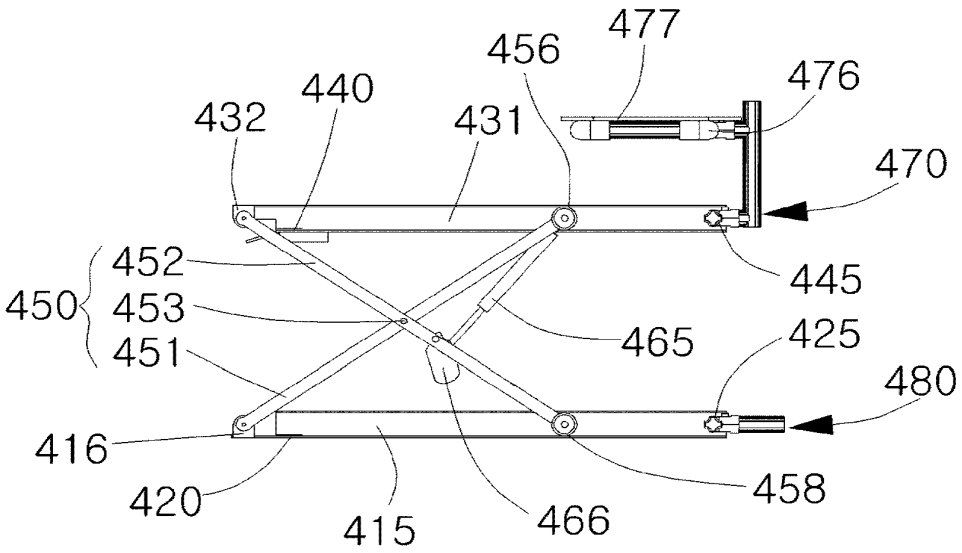
[도18]


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[도19]



[도20]


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INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2017/006656

A. CLASSIFICATION OF SUBJECT MATTER

A47B 9/00(2006.01)i, A47B 13/08(2006.01)i, A47B 13/02(2006.01)i, A47B 17/02(2006.01)i, A47B 21/02(2006.01)i, A47B 9/16(2006.01)i, F16B 12/10(2006.01)i

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)

A47B 9/00; A47B 1/05; A47C 17/52; F16B 12/20; B60S 9/00; A61G 13/06; A47B 23/02; A61G 7/00; A47B 13/08; A47B 17/00; A47B 13/02; A47B 17/02; A47B 21/02; A47B 9/16; F16B 12/10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility models: IPC as above
Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS (KIPO internal) & Keywords: lift table, frame, lifting, leg, roller, connection shaft, operating member, fixing groove, fixing ring, lifting power control member, auxiliary device, detachable groove, detachable tongs

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2014-027987 A (PARAMOUNT BED CO., LTD.) 13 February 2014 See paragraphs [0039]-[0048] and figures 1-11.	1-2,7-8,10-11
Y		3-6,9
A		12-25
Y	KR 20-1999-0029343 U (HYUNDAI MOTOR COMPANY) 15 July 1999 See claim 1 and figures 2-3.	3-6,9
X	KR 20-0478652 Y1 (SMT INC.) 02 November 2015 See paragraphs [0027]-[0039], [0049] and figures 2-12.	12,20-21,25
Y		13-19,22-24
Y	KR 10-1435160 B1 (ZETSTAR CO., LTD.) 29 August 2014 See paragraphs [0041]-[0046] and figures 3a-8a.	13-19
Y	DE 19837188 C1 (DLW BROEINRICHTUNGEN GMBH.) 30 September 1999 See abstract, claim 1 and figure 1.	14-19,22-24

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"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)
"O" document referring to an oral disclosure, use, exhibition or other means
"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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
13 SEPTEMBER 2017 (13.09.2017)	**14 SEPTEMBER 2017 (14.09.2017)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon, 189 Seonsa-ro, Daejeon 302-701, Republic of Korea Facsimile No. +82-42-481-8578	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

Patent document cited in search report	Publication date	Patent family member	Publication date
JP 2014-027987 A	13/02/2014	NONE	
KR 20-1999-0029343 U	15/07/1999	NONE	
KR 20-0478652 Y1	02/11/2015	JP 3206215 U KR 20-0479292 Y1	08/09/2016 12/01/2016
KR 10-1435160 B1	29/08/2014	NONE	
DE 19837188 C1	30/09/1999	NONE	

국 제 조 사 보 고 서

국제출원번호
PCT/KR2017/006656

A. 발명이 속하는 기술분류(국제특허분류(IPC))

A47B 9/00(2006.01)i, A47B 13/08(2006.01)i, A47B 13/02(2006.01)i, A47B 17/02(2006.01)i, A47B 21/02(2006.01)i, A47B 9/16(2006.01)i, F16B 12/10(2006.01)i

B. 조사된 분야

조사된 최소문헌(국제특허분류를 기재)
A47B 9/00; A47B 1/05; A47C 17/52; F16B 12/20; B60S 9/00; A61G 13/06; A47B 23/02; A61G 7/00; A47B 13/08; A47B 17/00; A47B 13/02; A47B 17/02; A47B 21/02; A47B 9/16; F16B 12/10

조사된 기술분야에 속하는 최소문헌 이외의 문헌
한국등록실용신안공보 및 한국공개실용신안공보: 조사된 최소문헌란에 기재된 IPC
일본등록실용신안공보 및 일본공개실용신안공보: 조사된 최소문헌란에 기재된 IPC

국제조사에 이용된 전산 데이터베이스(데이터베이스의 명칭 및 검색어(해당하는 경우))
eKOMPASS(특허청 내부 검색시스템) & 키워드: 리프트 테이블, 프레임, 승강, 레그, 롤러, 연결축, 작동부재, 고정홈, 고정링, 승강력조절부재, 보조장치, 착탈홈, 착탈집게

C. 관련 문헌

카테고리*	인용문헌명 및 관련 구절(해당하는 경우)의 기재	관련 청구항
X	JP 2014-027987 A (PARAMOUNT BED CO., LTD.) 2014.02.13 단락 [0039]-[0048] 및 도면 1-11 참조.	1-2,7-8,10-11
Y		3-6,9
A		12-25
Y	KR 20-1999-0029343 U (현대자동차 주식회사) 1999.07.15 청구항 1 및 도면 2-3 참조.	3-6,9
X	KR 20-0478652 Y1 (주식회사 에스엠티) 2015.11.02 단락 [0027]-[0039], [0049] 및 도면 2-12 참조.	12,20-21,25
Y		13-19,22-24
Y	KR 10-1435160 B1 (제트스타 주식회사) 2014.08.29 단락 [0041]-[0046] 및 도면 3a-8a 참조.	13-19
Y	DE 19837188 C1 (DLW BROEINRICHTUNGEN GMBH.) 1999.09.30 요약, 청구항 1 및 도면 1 참조.	14-19,22-24

☐ 추가 문헌이 C(계속)에 기재되어 있습니다.

☒ 대응특허에 관한 별지를 참조하십시오.

* 인용된 문헌의 특별 카테고리:

"A" 특별히 관련이 없는 것으로 보이는 일반적인 기술수준을 정의한 문헌

"E" 국제출원일보다 빠른 출원일 또는 우선일을 가지나 국제출원일 이후에 공개된 선출원 또는 특허 문헌

"L" 우선권 주장에 의문을 제기하는 문헌 또는 다른 인용문헌의 공개일 또는 다른 특별한 이유(이유를 명시)를 밝히기 위하여 인용된 문헌

"O" 구두 개시, 사용, 전시 또는 기타 수단을 언급하고 있는 문헌

"P" 우선일 이후에 공개되었으나 국제출원일 이전에 공개된 문헌

"T" 국제출원일 또는 우선일 후에 공개된 문헌으로, 출원과 상충하지 않으며 발명의 기초가 되는 원리나 이론을 이해하기 위해 인용된 문헌

"X" 특별한 관련이 있는 문헌. 해당 문헌 하나만으로 청구된 발명의 신규성 또는 진보성이 없는 것으로 본다.

"Y" 특별한 관련이 있는 문헌. 해당 문헌이 하나 이상의 다른 문헌과 조합하는 경우로 그 조합이 당업자에게 자명한 경우 청구된 발명은 진보성이 없는 것으로 본다.

"&" 동일한 대응특허문헌에 속하는 문헌

국제조사의 실제 완료일	국제조사보고서 발송일
2017년 09월 13일 (13.09.2017)	2017년 09월 14일 (14.09.2017)

ISA/KR의 명칭 및 우편주소
대한민국 특허청
(35208) 대전광역시 서구 청사로 189,
4동 (둔산동, 정부대전청사)
팩스 번호 +82-42-481-8578

심사관
황찬윤
전화번호 +82-42-481-3347

서식 PCT/ISA/210 (두 번째 용지) (2015년 1월)

국 제 조 사 보 고 서
대응특허에 관한 정보

국제출원번호
PCT/KR2017/006656

국제조사보고서에서 인용된 특허문헌	공개일	대응특허문헌	공개일
JP 2014-027987 A	2014/02/13	없음	
KR 20-1999-0029343 U	1999/07/15	없음	
KR 20-0478652 Y1	2015/11/02	JP 3206215 U KR 20-0479292 Y1	2016/09/08 2016/01/12
KR 10-1435160 B1	2014/08/29	없음	
DE 19837188 C1	1999/09/30	없음	

서식 PCT/ISA/210 (대응특허 추가용지) (2015년 1월)

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	1001-001US16
	Application Number	
Title of Invention	DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
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☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 — Remove

Legal Name

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	Nathan	Mark	Poniatowski	

Residence Information (Select One) ● US Residency Non US Residency Active US Military Service

City	Santa Rosa Beach	State/Province	FL	Country of Residence	US

Mailing Address of Inventor:

Address 1	300 Flatwoods Forest Loop		
Address 2			
City	Santa Rosa Beach	State/Province	FL
Postal Code	32459	Country	US

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Application Information:

Title of the Invention	DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY		
Attorney Docket Number	1001-001US16	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	25	Suggested Figure for Publication (if any)	

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Filing By Reference:

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For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☒ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	17493812	2021-10-04

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	1001-001US16
	Application Number	
Title of Invention	DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY	

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
17493812	Continuation of	16785647	2020-02-09	11134773	2021-10-05

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16785647	Continuation of	16372334	2019-04-01	10575630	2020-03-03

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16372334	Division of	15628558	2017-06-20	10244861	2019-04-02

Prior Application Status	Abandoned	Remove

Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
15628558	Division of	15004926	2016-01-23

Prior Application Status	Expired	Remove

Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
15004926	Claims benefit of provisional	62107380	2015-01-24

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	Application Number	
Title of Invention	DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY	

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	1001-001US16
	Application Number	
Title of Invention	DESKTOP WORKSPACE THAT ADJUSTS VERTICALLY	

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When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

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	Application Number	
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If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

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Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

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Name of the Deceased or Legally Incapacitated Inventor:

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Address 2			
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Assignee 1

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Signature	/Daniel T. Lund/			Date (YYYY-MM-DD)	2022-11-10
First Name	Daniel	Last Name	Lund	Registration Number	58614

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	1001-001US16
	Application Number	
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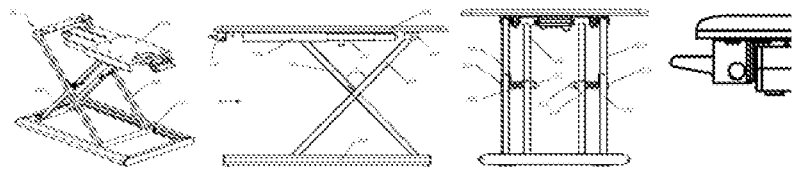
Patents

Lifting table and support structure thereof

Abstract

A support structure and a lifting table (10), the support structure comprising a first support assembly (200), a second support assembly (300), a top connecting assembly (100), an elastic part and an auxiliary power component (150); the first support assembly (200) and the second support assembly (300) form an X shape; the top connecting assembly (100) comprises a fixed assembly and a moving assembly (110) capable of moving along a first horizontal direction relative to the fixed assembly, an upper end of the first support assembly (200) being hinged to the fixed assembly, and an upper end of the second support assembly (300) being hinged to the moving assembly (110); the elastic part is disposed between the first support assembly (200) and the second support assembly (300) at a hinge point between the two, and is used to cause the upper end of the second support assembly (300) to apply a moving biasing force toward the top end of the first support assembly (200); the auxiliary power component (150) is connected between the fixed assembly and the moving assembly (110). A lifting table (10) using the described support structure extends and retracts more freely, takes up less surface area and saves material.

Images (14)



WO2019001507A1
WIPO (PCT)

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Other languages: French, Chinese

Inventor: [redacted]

Worldwide applications

2018 WO

Application PCT/CN2018/093294 events

2017-06-28 Priority to CN201720765866.0U
2017-06-28 Priority to CN201710509581.8
2017-06-28 Priority to CN201720765866.0
2017-06-28 Priority to CN201710509581.8A
2018-06-28 Application filed by [redacted]
2019-01-03 Publication of WO2019001507A1

Info: Patent citations (6), Cited by (2), Legal events, Similar documents, Priority and Related Applications

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Classifications

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Claims (15)

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1. A support structure for a lifting table, comprising:

   a first support assembly and a second support assembly, the first support assembly and the second support assembly are hinged to form an X shape;

   a top connection assembly, the top connection assembly including a fixed assembly and a movable assembly movable relative to the fixed assembly in a first horizontal direction, wherein an upper end of the first support assembly is hinged to the fixed assembly, the first An upper end of the two support assemblies is hinged to the moving assembly;

   An elastic member disposed between the first support assembly and the second support assembly at a hinge therebetween for providing an upper end of the second support assembly toward the first support The biasing force of the upper end of the assembly; and

   An auxiliary power member, the first end of the auxiliary power member is coupled to the fixed assembly, and a second end of the auxiliary power member opposite the first end is coupled to the moving assembly.

2. The support structure according to claim 1, wherein said first support assembly and said second support assembly are hinged by a pin, said elastic member comprising a torsion spring, said torsion spring being sleeved on said pin The shaft is located between the first support assembly and the second support assembly, and the two ends of the torsion spring respectively abut the first support assembly and the second support assembly.

3. The support structure according to claim 1, wherein said fixing assembly comprises first and second fixing members spaced apart in said first horizontal direction;

   The moving assembly is slidably disposed on the first fixing component, and an upper end of the first supporting component is hinged to the second fixing component.

4. The support structure according to claim 3, wherein the first fixing assembly comprises a pair of first fixing members disposed opposite to each other, and a pair of second fixing members disposed opposite to each other, the relative relationship of the first fixing members a first slide is disposed on an inner side thereof, and a second slide is disposed on an opposite inner side of the second fixing member.

   The moving component has a Y shape, and the moving component of the Y shape has a large end and a small end along the first horizontal direction, and a first sliding member is disposed on both sides of the large end of the moving component. a second sliding member is disposed on both sides of the small-sized end of the moving assembly, the first sliding member is slidably coupled to the first sliding rail, and the second sliding member is slidably coupled to the second sliding member Road.

5. The support structure according to claim 1, wherein said first support assembly comprises two first support columns and a first connecting post spaced apart in a second horizontal direction, said first connecting post being connected Between the bottoms of the first support columns to form a U-shaped structure, wherein the second horizontal direction is perpendicular to the first horizontal direction.

6. The support structure according to claim 5, wherein said second support assembly comprises two second support columns and a second connecting post spaced apart in said second horizontal direction, said second connecting post being connected Between the bottoms of the second support columns to form a U-shaped structure.

7. The support structure of claim 1 further comprising a bottom frame assembly, a lower end of said first support assembly being movably coupled to said bottom frame assembly, said lower end of said second support assembly being hinged to said The bottom frame component.

8. The support structure according to claim 7, wherein the bottom frame assembly comprises a pair of opposite bottom beams and a pair of opposite end beams, the pair of bottom end beams being respectively connected to the one a pair of bottom beams extending in the first horizontal direction at both ends of the bottom beam, wherein

a lower end of the first support assembly is slidably coupled to the pair of bottom beams;

A lower end of the second support assembly is pivotally coupled to one of the pair of bottom end beams.

9. The support structure according to claim 8, wherein the first support assembly further comprises a third sliding member disposed on both sides of the lower end of the first supporting assembly,

The opposite inner sides of the pair of bottom beams are provided with a third slide, and the third sliding member is connected to the third slide.

10. The support structure according to claim 7, wherein the fixing assembly further comprises a lock switch, the lock switch comprising:

a wrench fixing seat, the wrench fixing seat is disposed at an end of the fixing component along the first horizontal direction, and a first end of the auxiliary power component is fixed to the wrench fixing seat;

a wrench pivotally disposed within the wrench mount between a locked position and an unlocked position;

a transmission member coupled to the wrench and driven by the wrench to move in the first horizontal direction for applying a thrust to the first end of the auxiliary power member to unlock the auxiliary power member.

11. The support structure according to claim 10, wherein said wrench extends in a second horizontal direction perpendicular to said first horizontal direction, said wrench has an L-shaped cross section, said wrench having a horizontal section and a vertical In the straight section, the horizontal section is for gripping and the vertical section is connected to the transmission member.

12. The support structure according to claim 10, wherein said lock switch further comprises a pivoting member, one end of said pivoting member being pivotally coupled to said wrench holder, and the other end being The first end of the auxiliary power member can be pushed under the pushing of the transmission member to unlock the auxiliary power member.

13. The support structure according to claim 10, wherein said lock switch further comprises a hook, said hook being disposed on said transmission member, said hook being in said locked position of said wrench The bottom frame assembly can be snapped into engagement and the engagement with the bottom frame assembly can be released when the wrench is in the unlocked position.

14. The support structure according to claim 1, wherein said auxiliary power member is a self-locking type gas spring.

15. A lifting table comprising a table top and a supporting structure for supporting the table board, wherein the supporting structure is the supporting structure according to any one of claims 1 to 14, the table board being fixed at the On the fixed component of the top connection assembly.

Description

Lifting table and support structure thereof
Technical field

The present invention relates to the field of lift table equipment, and in particular to a support structure for a lift table, and a lift table having the support structure.

Background technique

Due to the needs of modern life and work, many people must maintain a long-term sitting position for focused labor; according to medical research, long-term sitting posture will increase cardiovascular disease, diabetes and obesity; for those who maintain a long sitting position for a single day Will increase its chance of dying from cardiovascular disease by 50%; maintaining the sitting posture will slow down the circulation of lipase in the human body and reduce the absorption of fat by the human body. When standing, the muscle will promote the action of lipase and promote the treatment of the human body. Fat and cholesterol, which came into being a relatively high workbench used when standing, but the use of high workbench also has the disadvantage of taking up space and increasing costs, which is not necessary for both sitting and using. The standing table is used to solve the corresponding technical problems.

Summary of the invention

In order to at least partially solve the problem of cost increase in the existing work table or workbench, the present invention provides a support structure for a lift table, comprising:

a first support assembly and a second support assembly, the first support assembly and the second support assembly are hinged to form an X shape;

a top connection assembly, the top connection assembly including a fixed assembly and a movable assembly movable relative to the fixed assembly in a first horizontal direction, wherein an upper end of the first support assembly is hinged to the fixed assembly, the first An upper end of the two support assemblies is hinged to the moving assembly;

An elastic member disposed between the first support assembly and the second support assembly at a hinge therebetween for providing an upper end of the second support assembly toward the first support The biasing force of the upper end of the assembly; and

An auxiliary power member, the first end of the auxiliary power member is coupled to the fixed assembly, and a second end of the auxiliary power member opposite the first end is coupled to the moving assembly.

Preferably, the first support assembly and the second support assembly are hinged by a pin, the elastic member comprises a torsion spring, and the torsion spring is sleeved on the pin and located at the first support assembly Between the second support assemblies, two ends of the torsion spring respectively abut the first support assembly and the second support assembly.

Preferably, the fixing assembly includes a first fixing component and a second fixing component spaced apart in the first horizontal direction; the moving component is slidably disposed on the first fixing component, the first An upper end of the support assembly is hinged to the second stationary component.

Preferably, the first fixing component includes a pair of first fixing members disposed opposite to each other, and a pair of second fixing members disposed opposite to each other, and the opposite inner side of the first fixing member is provided with a first sliding rail. The opposite inner side of the second fixing member is provided with a second sliding passage, the moving assembly is Y-shaped, and the moving assembly of the Y shape has a large-sized end and a small-sized end along the first horizontal direction, the movement a first sliding member is disposed on both sides of the large-sized end of the assembly, and a second sliding member is disposed on both sides of the small-sized end of the moving assembly, and the first sliding member is slidably coupled to the first sliding rail. The second slider is slidably coupled to the second slide.

Preferably, the first support assembly includes two first support columns and a first connecting post spaced apart in a second horizontal direction, the first connecting post being connected between the bottoms of the first support columns, A U-shaped structure is formed, wherein the second horizontal direction is perpendicular to the first horizontal direction.

Preferably, the second support assembly includes two second support columns and a second connecting post spaced apart in the second horizontal direction, the second connecting post being connected between the bottoms of the second support columns To form a U-shaped structure.

Preferably, a bottom frame assembly is further included, a lower end of the first support assembly being movably coupled to the bottom frame assembly, and a lower end of the second support assembly being hinged to the bottom frame assembly.

Preferably, the bottom frame assembly includes a pair of opposite bottom beams and a pair of opposite end beams disposed opposite to each other, the pair of bottom end beams being respectively connected to two ends of the pair of bottom beams, the pair a bottom beam extending along the first horizontal direction, wherein a lower end of the first support assembly is slidably coupled to the pair of bottom beams; a lower end of the second support assembly is pivotally coupled to the pair One of the bottom end beams.

Preferably, the first support assembly further includes a third sliding member disposed on two sides of a lower end of the first supporting assembly, and a third inner side of the pair of bottom beams is disposed with a third inner side a slide, the third slider is connected to the third slide.

Preferably, the fixing assembly further includes a locking switch, the locking switch includes: a wrench fixing seat, the wrench fixing seat is disposed at an end of the fixing component along the first horizontal direction, a first end of the auxiliary power member is fixed to the wrench holder; a wrench pivotally disposed in the wrench holder between the locked position and the unlocked position; and a transmission member, the transmission member Connecting to the wrench and being driven by the wrench to move in the first horizontal direction for applying a thrust to the first end of the auxiliary power member to unlock the auxiliary power member.

Preferably, the wrench extends in a second horizontal direction perpendicular to the first horizontal direction, the wrench has an L-shaped cross section, the wrench has a horizontal section and a vertical section, and the horizontal section is used for grasping The vertical section is coupled to the transmission member.

Preferably, the lock switch further includes a pivoting member, one end of the pivoting member being pivotally connected to the wrench holder, and the other end being capable of pushing the auxiliary under the pushing of the transmission member a first end of the power member to unlock the auxiliary power member.

Preferably, the lock switch further includes a hook, the hook is disposed on the transmission member, and the hook can be engaged to the bottom frame assembly when the wrench is in the locked position, And the engagement with the bottom frame assembly can be released when the wrench is in the unlocked position.

Preferably, the auxiliary power member is a self-locking type gas spring.

According to another aspect of the present invention, there is also provided a lifting table comprising a table top and a supporting structure supporting the table board, wherein the supporting structure is any one of the supporting structures as described above, the table A plate is secured to the stationary component of the top

connection assembly.

The support structure provided by the invention is an X-shaped support structure, which can not only solve the problem of occupying space existing in the existing work table or the workbench, but also increase the cost; and the elastic part at the hinge of the first support component and the second support component The biasing effect, at the same time, the role of the auxiliary power member, so that the supporting structure of the support structure is excellent, and it can be retracted freely. Since the vertical descending gravity greatly causes the risk of pinching, the lifting table adopts the supporting structure of the invention, not only can prevent the risk of pinching, but also does not generate noise when stowed; in addition, the lifting table is based on the function of the elastic member and the auxiliary power member. It can also automatically rise, reduce human intervention, and it is convenient and quick to deploy, which brings convenience to users.

A series of simplified forms of concepts are introduced in the Summary of the invention, which will be further described in detail in the Detailed Description section. The summary is not intended to limit the key features and essential technical features of the claimed invention, and is not intended to limit the scope of protection of the claimed embodiments.

Advantages and features of the present invention are described in detail below with reference to the accompanying drawings.

DRAWINGS

The following drawings of the invention are hereby incorporated by reference in their entirety in their entirety. The embodiments of the invention and the description thereof are shown in the drawings in the drawing.

1 is a perspective view of a support structure in an unfolded state in accordance with one embodiment of the present invention;

Figure 2 is a side elevational view of a lift table in accordance with one embodiment of the present invention;

Figure 3 is a schematic view showing the A direction of the lifting table of the present invention in Figure 2;

Figure 4 is a side elevational view of the lift table in a stowed condition, in accordance with one embodiment of the present invention;

Figure 5 is a bottom view of the lift table of Figure 1 in an unfolded state;

Figure 6 is an exploded view of the upper portion of the lift table in accordance with one embodiment of the present invention;

Figure 7 is a bottom exploded view of the lift table in accordance with one embodiment of the present invention;

Figure 8 is a perspective view of the support structure in an unfolded state in accordance with another embodiment of the present invention;

Figure 9 is a side elevational view of a lift table in accordance with another embodiment of the present invention;

Figure 10 is a schematic view showing the A direction of the lifting table of the present invention in Figure 9;

Figure 11 is a bottom plan view showing the lift table in a stowed state according to an embodiment of the present invention;

Figure 12 is a side elevational view of the lift table of Figure 11;

Figure 13 is an exploded view of the top connection assembly of the lift table in accordance with one embodiment of the present invention;

Figure 14 is a fragmentary view of a lift table in accordance with one embodiment of the present invention.

Detailed ways

In the following description, numerous details are provided in order to provide a thorough understanding of the invention. However, those skilled in the art can understand that the following description is merely illustrative of a preferred embodiment of the invention, which may be practiced without one or more such details. Moreover, in order to avoid confusion with the present invention, some of the technical features well known in the art are not described in detail.

According to an aspect of the invention, a support structure for a lift table is provided, the support structure of the present invention being an X-shaped support structure. The advantage of the X-shaped support structure of the present invention over the prior art is that it is freely retractable and takes up little space.

1-7 illustrate, from various angles, the entirety of a support structure and various components or portions included in the support structure in accordance with one embodiment of the present invention. In order to understand the position and function of these components or portions in the support structure, the support structure is first described in its entirety to provide a thorough understanding of the present invention.

As shown in FIGS. 1-5, the present invention provides a support structure for a lift table 10, including a top joint assembly 100, a first support assembly 200, a second support assembly 300, an elastic member, and an auxiliary power member 150.

The top connection assembly 100 includes a stationary assembly and a moving assembly 110. The moving assembly 110 is movable relative to the stationary assembly in a first horizontal direction. The first horizontal direction is the direction indicated by the arrow A in FIG. 2 and the opposite direction thereof, that is, the longitudinal direction of the lifting table. In the embodiment shown in the figures, the securing assembly is separate and includes a first securing component 120 and a second securing component 140 spaced apart in a first horizontal direction. Alternatively, the fixing component can also be integral. The table top 500 of the lift table is secured to the top attachment assembly 100. Illustratively, the table top 500 is of wood or stainless steel.

The first support assembly 200 is hinged to the second support assembly 300 to form an X shape. The elastic member is disposed between the first support assembly 200 and the second support assembly 300 at a hinge therebetween. The elastic member may be, for example, the torsion springs 212 and 222 in the illustrated embodiment. Alternatively, the elastic member may also employ a spring piece. The elastic member serves to provide a biasing force that causes the upper end of the second support assembly 300 to be applied toward the upper end of the first support assembly 200. The upper end of the second support assembly 300 has a tendency to move toward the upper end of the first support assembly 200 under the action of the elastic member.

Illustratively, the first support assembly 200 and the second support assembly 300 can be hinged by pins 211 and 221 . The elastic members may include torsion springs 212 and 222. The torsion springs 212 and 222 are respectively sleeved on the corresponding pins 211 and 221 and located between the first support assembly 200 and the second support assembly 300. Both ends of the torsion springs 212 and 222 abut against the first support assembly 200 and the second support assembly 300, respectively.

Illustratively, the first support assembly 200 can include two first support columns 210 and 220 and a first connection post 230 spaced apart in a second horizontal direction. The second horizontal direction is perpendicular to the first horizontal direction. The first connection post 230 is coupled between the bottoms of the first support columns 210 and 220 to form a U-shaped structure.

Illustratively, the second support assembly 300 can include two second support columns 310 and 320 and a second connection post 330 spaced apart in a second horizontal direction. The second connection post 330 is coupled between the bottoms of the second support columns 310 and 320 to form a U-shaped structure.

Preferably, as shown in FIG. 3, the second support assembly 300 is located inside the first support assembly 200 as viewed in a direction perpendicular to the plane of the paper (ie, the first horizontal direction). The pin 211 sequentially passes through the middle of the first support post 210, the torsion spring 212 and the middle of the second support post 310, and the pin 211 is locked by a nut 311. Both ends of the torsion spring 212 abut against the outer surfaces of the first support post 210 and the second support post 310, respectively. Alternatively, holes may be provided on opposite sides of the first support post 210 and the second support post 310, and both ends of the torsion spring 212 respectively abut against the holes. The pin 221 sequentially passes through the middle of the first support post 220, the torsion spring 222 and the middle of the second support post 320, and the pin 221 is locked by a nut 321 . Both ends of the torsion spring 222 abut against the outer surfaces of the first support post 220 and the second support post 320, respectively. Optionally, holes are also provided on opposite sides of the first support post 220 and the second support post 320, and both ends of the torsion spring 222 abut against the holes, respectively.

Preferably, the moving component 110 is provided with a plurality of limiting holes 115 extending along the first horizontal direction, as shown in FIG. 6. The limiting hole 115 is used to pass and fix the limiting screw 114 to the table top 500 of the lifting table. Illustratively, the limiting hole 115 is elongated, and the limiting screw 114 is fixed to the table 500 after passing through the limiting sleeve 113 and the limiting hole 115 in sequence.

The upper end of the first support assembly 200 is hinged to the fixed assembly, and the upper end of the second support assembly 300 is hinged to the moving assembly 110. By moving the moving assembly 110, the top angle α (see FIG. 2) between the first support assembly 200 and the second support assembly 300 is changed, thereby adjusting the height of the support structure, and lifting and lowering the lifting table. In embodiments where the stationary component is a split component, the mobile component 110 is slidably disposed on the first stationary component 120 and the upper end of the first support component 200 can be hinged to the second stationary component 140.

Optionally, pulleys are disposed on both sides of the moving assembly 110. As shown in FIGS. 6-7, pulleys 111 are disposed on both sides of the moving assembly 110. The opposite side of the first fixing component 120 is provided with a slide 121. The slide 121 extends in the first horizontal direction. The pulleys 111 are respectively

connected to the respective slides 121. The movable connection of the moving assembly 110 and the first fixed assembly 120 is achieved by the pulley moving within the slide. The moving assembly 110 is provided with a connector 116 for articulating the upper end of the second support assembly 300, as shown in FIG. The second fixing component 140 is provided with a connecting seat 141 for articulating the upper end of the first supporting component 200.

The auxiliary power unit 150 is coupled between the fixed assembly and the moving assembly 110. The auxiliary power unit 150 has opposite first and second ends. The first end of the auxiliary power unit 150 is coupled to the stationary assembly and the second end is coupled to the moving assembly 110. The auxiliary power unit 150 may employ a gas spring. Preferably, the gas spring can be a self-locking gas spring. The self-locking gas spring can be stopped at any position in the stroke and has a large locking force after stopping.

According to the support structure provided by the present invention, since the upper end of the second support assembly 300 is coupled to the moving assembly 110 of the top joint assembly 100, when a downward force is applied to the table 500, the upper end of the second support assembly 300 is at the moving assembly Moving downward in a direction away from the upper end of the first support assembly 200, the top angle a (see FIG. 2) between the first support assembly 200 and the second support assembly 300 is increased, the auxiliary power member 150 is compressed, and the support structure as a whole The height is lowered to meet the sitting position. Fig. 4 is a schematic view of the lifting table in a stowed state, which takes up a small space after being stored, and can be in a very light and thin state in the same industry, and is preferably about 5 cm. When the table top is to be raised, the top angle a is reduced and the overall height of the support structure is raised to meet the standing position requirement under the bias of the elastic members at the hinge of the first support assembly 200 and the second support assembly 300.

Preferably, the support structure further includes a bottom frame assembly 400. The lower end of the first support assembly 200 is movably coupled to the bottom frame assembly 400. The lower end of the second support assembly 300 is hinged to the bottom frame assembly 400. By providing the bottom frame assembly 400, the support structure 10 is more stable and secure.

Illustratively, the bottom frame assembly 400 includes a pair of opposite bottom beams 430 and 440 and a pair of opposite end beams 410 and 420 disposed opposite each other. Bottom end beams 410 and 420 are coupled to both ends of bottom beams 430 and 440, respectively. The bottom beams 430 and 440 extend in a first horizontal direction. The lower end of the first support assembly 200 is slidably coupled to the bottom beams 430 and 440. The lower end of the second support assembly 300 is pivotally coupled to the bottom end beam 410 or 420. The bottom end beams 410 and 420 respectively seal the ends of the bottom beams 430 and 440 at both ends. Alternatively, the bottom end beams 410 and 420 can be secured to the bottom cross members 430 and 440 by threaded fasteners.

Illustratively, the first support assembly 200 further includes sliders 213 and 223, as shown in FIG. The sliders 213 and 223 are respectively mounted on both sides of the lower end of the first support assembly 200, for example, at both ends of the first connection post 230 of the first support assembly 200. The opposite inner sides of the bottom beams 430 and 440 are provided with slides 431 and 441. Sliders 213 and 223 are connected to the slides 431 and 441.

Preferably, the fixing assembly further comprises a lock switch. The lock switch includes a wrench mount 131, a wrench 130, and a transmission member 132.

The wrench holder 131 is disposed at an end of the fixing assembly in a first horizontal direction. The wrench holder 131 is disposed, for example, on the first fixing component 120 or separately from the first fixing component 120 and the second fixing component 140. The first end of the auxiliary power member 150 is fixed to the wrench holder 131. The wrench 130 is pivotally disposed within the wrench mount 131 between the locked position and the unlocked position. Illustratively, the wrench 130 can be pivotally coupled to the wrench mount 131 by a pin 133. For ease of grip, the wrench 130 can be exposed beyond the edge of the table top 500. When the lifting and lowering operations are performed on the lifting table, the table top 500 can be leveraged, that is, the palms are on the top and the fingers are down while holding the edge of the table 500 and the wrench 130 to rotate the wrench 130.

Illustratively, the wrench 130 extends in a second horizontal direction that is perpendicular to the first horizontal direction. The wrench 130 has an L-shaped cross section. As shown in FIG. 6, the wrench 130 has a horizontal section and a vertical section. Wherein the horizontal section is for gripping and the vertical section is connected to the transmission member 132.

The transmission member 132 is coupled to the wrench 130. When the wrench 130 rotates, the transmission member 132 can be driven to move in the first horizontal direction. The transmission member 132 moves, and a thrust can be applied to the first end of the auxiliary power member 150 to unlock the self-locking function of the auxiliary power member 150. It should be noted that the transmission member 132 may directly apply a thrust to the auxiliary power member 150 to unlock the auxiliary power member 150; or, alternatively, the transmission member 132 indirectly applies a thrust to the auxiliary power member 150 through the intermediate member.

Illustratively, the transmission member 132 includes a T-shaped body 132a, a wrench connection portion 132b, and a power piece connection portion 132c. The T-shaped body 132a extends in a first horizontal direction. The T-shaped body 132a has a large-sized end and a small-sized end in the first horizontal direction. A hook 134 is

provided at the junction of the large-sized end and the small-sized end. A wrench connecting portion 132b is provided at the large-sized end and is connected to the wrench 130. A power member connecting portion 132c is provided at the small-sized end and is connected to the auxiliary power member 150.

Preferably, the lock switch further includes a hook 134. A hook 134 is disposed on the transmission member 132. The hook 134 can be engaged with the bottom frame assembly 400 when the wrench 130 is in the locked position to achieve storage locking. A buckle 421 adapted to the hook 134 may be disposed at a position on the bottom frame assembly 400 corresponding to the hook 134. The buckle 421 can be disposed on the bottom end beam 420 of the bottom frame assembly 400 corresponding to the position of the hook 134. When the hook 134 is engaged with the buckle 421, the storage state is locked. When the wrench 130 is in the unlocked position, the engagement with the bottom frame assembly 400 can be released.

In the above preferred embodiment, the auxiliary power unit 150 is a self-locking type gas spring having a self-locking function. The auxiliary power unit 150 is coupled between the transmission member 132 and the moving assembly 110. When the wrench 130 is in the unlocked position, the self-locking function of the auxiliary power member 150 can be released.

Illustratively, when the wrench 130 is pivoted upward from the locked position shown in FIG. 6 to the unlocked position, the transmission member 132 is moved toward the second fixed assembly 140, for example, the ejector pin on the self-locking gas spring is pressed. To achieve the purpose of unlocking the self-locking gas spring. The self-locking gas spring can be expanded and contracted as needed after being unlocked.

For the above exemplary embodiment, when it is required to lower the height of the lifting table, the wrench 130 is rotated upward, the wrench 130 is rotated to the unlocking position, the self-locking function of the auxiliary power member 150 is released, and when the downward force is applied to the table 500, the top clamp is applied. The angle a increases and the height of the lift table decreases until it enters the state shown in FIG. When the wrench 130 is released, the wrench 130 returns to the locked position, and the buckle 421 is engaged with the hook 134 to achieve the locking state in the stored state. When it is necessary to raise the height of the lifting table, the wrench 130 is rotated upward to the unlocking position, the jam between the buckle 421 and the hook 134 is released, and the self-locking function of the auxiliary power member 150 is released, and the torsion springs 212 and 222 are under the action, the top angle a between the first support assembly 200 and the second support assembly 300 is reduced, and the overall height of the lifting table is raised to meet the stance requirement, and the wrench 130 is loosened.

Figures 6-14 illustrate, from various angles, the entirety of a support structure and various components or portions included in the support structure in accordance with

another embodiment of the present invention. The main difference between this embodiment and the embodiment depicted in Figures 1-7 is the top connection assembly 100', and thus the same or similar components as the above-described embodiments will be described with the same reference numerals when describing the other embodiment, and These same or similar components will not be described in detail.

The top connection assembly 100' includes a stationary assembly and a moving assembly 110'. The moving assembly 110' is movable relative to the stationary assembly in a first horizontal direction. The first horizontal direction is the longitudinal direction of the lift table shown by the arrow A in FIG. In the embodiment shown in the figures, the securing assembly is separate and includes a first securing assembly 120' and a second securing assembly 140' spaced apart in a first horizontal direction.

Preferably, the first fixing member 120' includes a pair of first fixing members 122' disposed opposite to each other, and a pair of second fixing members 124' disposed opposite to each other, as shown in Figs. The opposite inner side of the first fixing member 122' is provided with a first slide 126', and the opposite inner side of the second fixing member 124' is provided with a second slide 128'. The moving assembly 110' has a Y-shape, and the Y-shaped moving assembly 110' has a large-sized end and a small-sized end along the first horizontal direction. A first slider 112' is disposed on both sides of the large-sized end of the moving assembly 110', and a second slider 114' is disposed on both sides of the small-sized end of the moving assembly 110'. The first slider 112' is slidably coupled to the first runner 126' and the second slider 114' is slidably coupled to the second runner 128'. The first slider 112' and the second slider 114' may be pulleys, projections, and the like. Preferably, the first slider 112' and the second slider 114' are convex to simplify the structure and reduce the thickness of the lift table in the stowed state. The above scheme using the Y-shaped moving assembly 110' can alleviate the weight of the support structure, and since the sliders are both disposed at the end of the moving assembly 110', the spacing between the first slider 112' and the second slider 114' Larger, so the movement of the moving assembly 110' can be made more stable.

Further preferably, as shown in Figures 8-14, the lock switch has a preferred configuration, the lock switch including a wrench mount 131', a wrench 130', a transmission member 132', and a pivot member 135'.

The wrench holder 131' is disposed at the end of the fixing assembly along the first horizontal direction, and the first end of the auxiliary power member 150 is fixed to the wrench holder 131' as shown in FIG. The wrench 130' is pivotally disposed within the wrench mount 131' between the locked position and the unlocked position. The transmission member 132' is coupled to the wrench 130' and is moved by the wrench 130' in a first horizontal direction. One end of the pivoting member 135' is pivotally coupled to the wrench mount 131', and the other end can push the first end of the auxiliary power member 150 under the pushing of the transmission member 132' to

unlock the auxiliary power member 150. Since the pivoting member 135' increases the force arm of the ejector auxiliary power member 150, the user can rotate the wrench with a small force, thereby having a good hand feeling and improving the user experience.

The transmission member 132' can be sandwiched between the table top and the wrench holder 131', and the wrench holder 131' is restricted from being oriented in a first horizontal direction within a certain range. Illustratively, the protrusion 134a' on the transmission member 132' for pushing the pivoting member 135' protrudes below the wrench holder 131', and the remaining portion may be held between the table top and the wrench holder 131'.

The hook 134' is disposed below the transmission member 132'. The hook 134' is engageable to the bottom frame assembly when the wrench 130' is in the locked position and can be disengaged from the bottom frame assembly when the wrench 130' is in the unlocked position. The function of this portion of the hook 134' is the same as that of the foregoing embodiment, and therefore will not be described again.

For the above exemplary embodiment, when it is required to lower the height of the lifting table, the palm presses the table and the finger pulls the wrench 130' to rotate the wrench 130' upward to the unlocking position. Referring to FIG. 14, the transmission member 132' moves to the left side. The protrusion 134a' thereon pushes the pivoting member 135' such that the pivoting member 135' pushes the first end of the pivoting member 135' (for example, the ejector pin on the self-locking gas spring), releasing the auxiliary power member 150 Self-locking function. At this time, when a downward external force is applied to the table, the top angle α is increased, the auxiliary power member 150 is compressed, and the height of the lift table is lowered until it enters the state shown in Figs. 11-12. When the wrench 130 is loosened, the wrench 130 returns to the locked position, and during the returning process, the buckle 421 is engaged to the bottom frame assembly to achieve the locking state in the storage state. When it is necessary to raise the height of the lifting table, the wrench 130 is rotated upward to the unlocking position, the jam between the buckle 421 and the hook 134 is released, and the self-locking function of the auxiliary power member 150 is released, and the torsion springs 212 and 222 are Under the action, the top angle α between the first support assembly 200 and the second support assembly 300 is reduced, and the overall height of the lifting table is raised to meet the stance requirement, and the wrench 130 is loosened.

According to another aspect of the present invention, there is also provided a lift table comprising a support structure as described above.

The support structure of the invention has the advantages that the support buffering effect is excellent and the storage is free. Since the vertical descending gravity greatly causes the risk of pinching, the lifting table adopts the supporting structure of the invention, not only can prevent the risk of pinching, but also does not generate noise when stowed; in addition, the lifting table is based on the function of the elastic member and the auxiliary power member. It can also automatically rise, reduce human intervention, and it is convenient and quick to deploy, which brings convenience to users.

The locking switch provided by the utility model has excellent locking effect, does not undergo any deformation after being stored, and is firmly locked; and passes through the first supporting component and the second supporting component through the action of the auxiliary power component during the lifting process The elastic member at the hinge forms a tension function, and at the same time, since the upper end of the second support assembly is slidably coupled to the other end of the top joint assembly through the auxiliary power member, the support structure has an excellent cushioning effect, and is freely retractable, and the lift table is based on The function of the elastic part and the auxiliary power piece can also be automatically raised without human intervention; it is convenient and quick to deploy, and brings convenience to the user.

The present invention has been described by the above-described embodiments, but it should be understood that the above-described embodiments are only for the purpose of illustration and description. Further, those skilled in the art can understand that the present invention is not limited to the above embodiments, and various modifications and changes can be made according to the teachings of the present invention. These modifications and modifications are all claimed in the present Patent Claims(s) cope. The scope of the invention is defined by the appended claims and their equivalents.

Publication number	Priority date	Publication date	Assignee	Title
CN102715729A *	2012-07-11	2012-10-10	杭州盾达工艺制品有限公司	Lifting table top
CN105342138A *	2015-12-11	2016-02-24	深圳米乔科技有限公司	X-shaped lifting table
CN105901924A *	2016-06-29	2016-08-31	浙江嘉宜实业有限公司	Linkage mechanism for lift table
WO2016137119A1 *	2015-02-27	2016-09-01	에스케이이노 주식회사	Height-adjustable table

CN106473451A *	2016-11-04	2017-03-08	无锡爱力机械有限公司	Controllable gas spring same table
CN107149286A *	2017-06-28	2017-09-12	陈工	Same table and its supporting construction
Family To Family Citations				

* Cited by examiner, † Cited by third party

Cited By (2)

Publication number	Priority date	Publication date	Assignee	Title
US20200196748A1 *	2018-12-24	2020-06-25	Qidong Vision Mounts Manufacturing Co.,Ltd	Hand-operated Worm Gear Height Adjustable Table
US11134773B1 *	2015-01-24	2021-10-05	Office Kick, Inc.	Desktop workspace that adjusts vertically
Family To Family Citations				

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
WO2017045506A1	2017-03-23	Elevation working platform
US10264877B2	2019-04-23	Height adjustment mechanism, platform and method
US8276525B2	2012-10-02	Height-adjustable equipment stand
US6105508A	2000-08-22	Work surface for luggage and luggage carriers
WO2019001507A1	2019-01-03	Lifting table and support structure thereof
US6736073B2	2004-05-18	Work surface for luggage and luggage carriers
US10092089B1	2018-10-09	Height-adjustable table
JP4335282B2	2009-09-30	High and low adjustable table
US7252040B2	2007-08-07	Portable table for a laptop computer
US6439134B1	2002-08-27	Work surface for luggage and luggage carriers
EP3191063B1	2021-02-17	Seat assist device
CN107708486A	2018-02-16	Adjustable for height desk dock
USRE47955E1	2020-04-21	Folding table
WO2018010262A1	2018-01-18	Height-adjustable and stand-up computer desk
US10813448B2	2020-10-27	Hand-operated worm gear height adjustable table
US5449221A	1995-09-12	Portable leg rest
US11129298B2	2022-04-05	Lifting table
US20190053641A1	2019-02-21	Table or shelf with roll-top extender
US20200154877A1	2020-05-21	Multi-purpose portable platform stage
US20120271350A1	2012-10-25	Range of motion table
JP4335284B2	2009-09-30	High and low adjustable table
US8985031B2	2015-03-24	Desk top elevator
CN213524345U	2021-06-25	Students' dormitory bed is with activity type bed desk
US10918216B2	2021-02-16	System and method for raising a bed off the floor
WO2018054223A1	2018-03-29	Apparatus for adjusting device position

Priority And Related Applications

Priority Applications (4)

Application	Priority date	Filing date	Title
CN201720765866.0U	2017-06-28	2017-06-28	Same table and its locking mechanism
CN201710509581.5		2017-06-28	
CN201720765866.0		2017-06-28	
CN201710509581.5A	2017-06-28	2017-06-28	Same table and its supporting construction

Legal Events

Date	Code	Title	Description
2019-02-13	121	Ep: the epo has been informed by wipo that ep was designated in this application	**Ref document number:** 18825278 **Country of ref document:** EP **Kind code of ref document:** A1
2019-12-31	NENP	Non-entry into the national phase	**Ref country code:** DE
2020-08-12	122	Ep: pct application non-entry in european phase	**Ref document number:** 18825278 **Country of ref document:** EP **Kind code of ref document:** A1

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
biological transmission		claims,description	27	0.000
assembly		claims,description	3	0.000

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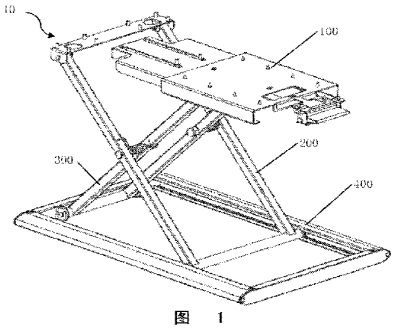


图 1

(57) Abstract: A support structure and a lifting table (10), the support structure comprising a first support assembly (200), a second support assembly (300), a top connecting assembly (100), an elastic part and an auxiliary power component (150); the first support assembly (200) and the second support assembly (300) form an X shape; the top connecting assembly (100) comprises a fixed assembly and a moving assembly (110) capable of moving along a first horizontal direction relative to the fixed assembly, an upper end of the first support assembly (200) being hinged to the fixed assembly, and an upper end of the second support assembly (300) being hinged to the moving assembly (110); the elastic part is disposed between the first support assembly (200) and the second support assembly (300) at a hinge point between the two, and is used to cause the upper end of the second support assembly (300) to apply a moving biasing force toward the top end of the first support assembly (200); the auxiliary power component (150) is connected between the fixed assembly and the moving assembly (110). A lifting table (10) using the described support structure extends and retracts more freely, takes up less surface area and saves material.

[见续页]

(57) 摘要：一种支撑结构和升降桌（10），支撑结构包括第一支撑组件（200）、第二支撑组件（300）、顶连接组件（100）、弹性部件和辅助动力件（150）；第一支撑组件（200）和第二支撑组件（300）形成X型；顶连接组件（100）包括固定组件和相对于固定组件沿第一水平方向可移动的移动组件（110），其中，第一支撑组件（200）的上端铰接于固定组件，第二支撑组件（300）的上端铰接于移动组件（110）；弹性部件在第一支撑组件（200）与第二支撑组件（300）的铰接处设置在两者之间，用于提供使第二支撑组件（300）的上端施加朝向第一支撑组件（200）的上端移动的偏置力；辅助动力件（150）连接在固定组件和移动组件（110）之间。升降桌（10）采用上述支撑结构后，收放更加自如，占地面积小，节省材料。

升降桌及其支撑结构

技术领域

本发明涉及升降桌设备领域，具体地，涉及一种用于升降桌的支撑结构，和具有该支撑结构的升降桌。

背景技术

由于现代生活和工作的需要，许多人必须維持长时间坐姿进行专注性劳动；根据医学研究，长时间的坐姿会增加心血管疾病、糖尿病以及肥脬等；对于单日維持长时间坐姿的人来说，将会增加其百分之五十死于心血管疾病的机率；由于維持坐姿会减緩人体中脂肪酶的循环，减少人体对脂肪的吸收，而站立时肌肉会促进脂肪酶作用，促使人体处理脂肪与胆固醇，这就应运而生了站立时使用的相对较高的工作台，但是高工作台的使用也产生了占用空间、成本增加的弊端，这就亟需既能用于坐姿又能用于站姿的升降桌来解决相应的技术问题。

发明内容

为了至少部分地解决现有工作桌或者工作台中存在的占用空间，成本增加的问题，本发明提供一种ǐ¼于升降桌的支撑结拘，包括：

第一支撑组件和第二支撑组件，所述第一支撑組件与所述第二支撑組件铰接形成X型；

顶连接組件，所述顶连接组件包括固定组件和相对于所述固定组件沿第一水平方向可移动的移动组件，其中，所述第一支撑組件的上端铰接于所述固定組件，所述第二支撑組件的上端铰接于所述移动组件；

弹性部件，所述弹性部件在所述第一支撑组件与所述第二支撑组件的铰接处设置在两者之间，用于提供使所述第二支撑组件的上端施加朝向所述第一支撑组件的上端移动的偏置力；以及

辅助动力件，所述辅助动力件的第一端连接至所述固定组件，且所述辅助动力件的与所述第一端相对的第二端连接至所述移动组件。

优选地，所述第一支撑组件与所述第二支撑组件通过销轴铰接，所述弹性部件包括扭簧，所述扭簧套设在所述销轴上且位于所述第一支撑组件与所述第二支撑组件之间，所述扭簧的两端分别抵靠所述第一支撑组件与所述第二支撑组件。

优选地，所述固定组件包括沿所述第一水平方向间隔开设置的第一固定組件和第二固定組件；所述移动组件可滑动地设置在所述第一固定组件上，所述第一支撑组件的上端铰接于所述第二固定组件。

优选地，所述第一固定组件包括相对设置的一对第一固定件、以及相对设置的一对第二固定件，所述第一固定件的相对的内侧设置有第一滑道，所述第二固定件的相对的内侧设置有第二滑道，所述移动组件呈Y形，Y形的所述移动组件沿着所述第一水平方向具有大尺寸端和小尺寸端，所述移动組件的大尺寸端的两侧设置有第一滑动件，所述移动组件的小尺寸端的两侧设置有第二滑动件，所述第一滑动件可滑动地连接至所述第一滑道，所述第二滑动件可滑动地连接至所述第二滑道。

优选地，所述第一支撑组件包括沿第二水平方向间隔开设置两个第一支撑柱以及第一连接柱，所述第一连接柱连接在所述第一支撑柱的底部之间，以形成U形结构，其中所述第二水平方向垂直于所述第一水平方向。

优选地，所述第二支撑组件包括沿所述第二水平方向间隔开设置两个第二支撑柱以及第二连接柱，所述第二连接柱连接在所述第二支撑柱的底部之间，以形成U形结构。

优选地，还包括底框组件，所述第一支撑組件的下端可移动地连接于所述底框组件，所述第二支撑组件的下端铰接于所述底框组件。

优选地，所述底框组件包括相对设置的一对底横梁以及相对设置的一对底端梁，所述一对底端梁分别连接至所述一对底横梁的两端，所述一对底横梁沿所述第一水平方向延伸，其中所述第一支撑组件的下端可滑动地连接于所述一对底横梁；所述第二支撑组件的下端可枢转地连接于所述一对底端梁中的一个。

优选地，所述第一支撑组件还包括第三滑动件，所述第三滑动件设置

在所述第一支撑组件的下端的两侧，所述一对底横梁的相对的内侧设置有第三滑道，所述第三滑动件连接至所述第三滑道。

优选地，所述固定组件还包括锁紧开关，所述锁紧开关包括：扳手固定座，所述扳手固定座沿着所述第一水平方向设置在所述固定组件的端部处，所述辅助动力件的第一端固定至所述扳手固定座；扳手，所述扳手在锁紧位置和解锁位置之间可枢转地设置在所述扳手固定座内；以及传动构件，所述传动构件连接至所述扳手，并由所述扳手带动沿所述第一水平方向移动，用于对所述辅助动力件的第一端施加推力而解锁所述辅助动力件。

优选地，所述扳手沿垂直于所述第一水平方向的第二水平方向延伸，所述扳手的截面呈L形，所述扳手具有水平段和竖直段，所述水平段用于抓握，所述竖直段连接至所述传动构件。

优选地，所述锁紧开关还包括枢转构件，所述枢转构件的一端可枢转地连接至所述扳手固定座，且另一端在所述传动构件的推动下可推顶所述辅助动力件的第一端，以解锁所述辅助动力件。

优选地，所述锁紧开关还包括卡钩，所述卡钩设置在所述传动构件上，所述卡钩在所述扳手处于所述镇紧位置时能够卡合至所述底框组件，且在所述扳手处于所述解锁位置时能够解除与所述底框組件的卡合。

优选地，所述辅助动力件为自锁型气弹簧。

根据本发明的另一个方面，还提供一种升降桌，包括桌板和支撑所述桌板的支撑结构，其特征在于，所述支撑结构为如上所述的任意一种支撑结构，所述桌板固定在所述顶连接组件的所述固定组件上。

本发明提供的支撑结构为X型支撑结构，其不仅能解决现有工作桌或者工作台中存在的占用空间，成本增加的问题；且由于第一支撑組件与第二支撑组件的铰接处的弹性部件的偏置作¾，同时，辅助动力件的作用，使得支撑结构的支撑緩冲效果极好，收放自如。由于垂直下降重力极大容易造成夹伤风险，升降桌采用本发明的支撑结构后，不但能防止夹伤风险，同时收起时不会产生噪音；此外升降桌基于弹性部件和辅助动力件的作用，还能够自动上升，减少人为干预，展开时方便快捷，给用户使用带来了方便。

在发明内容中引入了一系列简化形式的概念，这将在具体实施方式部

分中进一步详细说明。本发明内容部分并不意味着要试图限定出所要求保护的技术方案的关键特征和必要技术特征，更不意味着试图确定所要求保护的¾术方案的保护范围。

以下结合附图，详细说明本发明的优点和特征。

附图说明

本发明的下列附图在此作为本发明的一部分用于理解本发明。附图中示出了本发明的实施方式及其描述，用来解释本发明的原理。在附图中，

图 1 为根据本发明一个实施例的支撑结构处于展开状态的立体图；

图 2 为根据本发明一个实施例的升降桌的侧视图；

图 3 为图 2 中本发明的升降桌的 A 向示意图；

图 4 为根据本发明一个实施例的升降桌处于收纳状态的侧视图；

图 5 为图 1 中的升降桌处于展开状态的仰视图；

图 6 为根据本发明一个实施例的升降桌的上部爆炸图；

图 7 为根据本发明一个实施例的升降桌的下部爆炸图；

图 8 为根据本发明另一个实施例的支撑结构处于展开状态的立体图；

图 9 为根据本发明另一个实施例的升降桌的侧视图；

图 10 为图 9 中本发明的升降桌的 A 向示意图；

图 11 为根据本发明一个实施例的升降桌处于收纳状态的仰视图；

图 12 为图 11 中的升降桌的侧视图；

图 13 为根据本发明一个实施倒的升降桌的顶连接组件的爆炸图；以及

图 14 为根据本发明一个实施例的升降桌的局部图。

具体实施方式

在下文的描述中，提供了大量的细节以便能够彻底地理解本发明。然而，本领域技术人员可以了解，如下描述仅示倒性地示出了本发明的优选实施例，本发明可以无需一个或多个这样的细节而得以实施。此外，为了避免与本发明发生混淆，对于本领域公知的一些技术特征未进行详细描述。

根据本发明的一个方面，提供一种用于升降桌的支撑结构，本发明的支撑结构为X型支撑结拘。本发明的X型支撑结构相比于现有技术之处的优势在于：牧放自如，而且占用空间小。

图1—7从各个角度示出了根据本发明的一个实施例的支撑结构的整体以及该支撑结构所包含的各个部件或部分。为了了解这些部件或者部分在支撑结构中的位置和所起的作用，首先对支撑结构进行整体性描述，以便彻底地理解本发明。

如图1-5所示，本发明提供一种用于升降桌10的支撑结构，包括顶连接组件100、第一支撑组件200、第二支撑组件300、弹性部件以及辅助动力件150。

顶连接組件100包括固定组件和移动组件110。移动組件110相对于固定組件沿第一水平方向可移动。所述第一水平方向为图2中箭头A所示的方向及其相反方向，即升降桌的长度方向。在图中所示的实施倒中，固定組件是分体的，它包括沿第一水平方向间隔开设置的第一固定组件120和第二固定组件140。可选地，固定组件也可以是一体的。升降桌的桌板500固定于顶连接组件100上，示例性地，桌板500为木质或者不锈钢材质。

第一支撑组件200与第二支撑组件300铰接形成X型。弹性部件在第一支撑组件200与第二支撑组件3()()的铰接处设置在两者之间。弹性部件例如可采用图示实施例中的扭簧212和222，可选地，弹性部件还可以采用弹片。弹性部件用于提供使第二支撑组件300的上端施加朝向第一支撑组件200的上端移动的偏置力。在弹性部件的作用下，第二支撑组件300的上端具有朝向第一支撑组件200的上端移动的趋势。

示例性地，第一支撑组件2()()与第二支撑组件3()()可以通过销轴211和221铰接。弹性部件可以包括扭簧212和222。扭簧212和222分别套设在对应的销轴211和221上，并且位于第一支撑組件200和第二支撑组件300之间。扭簧212和222的两端分别抵靠第一支撑組件200和第二支撑组件300上。

示例性地，第一支撑组件200可以包括沿第二水平方向间隔开设置两个第一支撑柱210和220以及第一连接柱230。所述第二水平方向垂直于

所述第一水平方向。第一连接柱 230 连接在第一支撑柱 210 和 220 的底部之间，以形成 U 形结构。

示例性地，第二支撑组件 300 可以包括沿第二水平方向间隔开设置两个第二支撑柱 310 和 320 以及第二连接柱 330。第二连接柱 330 连接在第二支撑柱 310 和 320 的底部之间，以形成 U 形结构。

优选地，如图 3 所示，沿垂直于纸面的方向 (即第一水平方向)观看，第二支撑組件 300 位于第一支撑组件 200 的内侧。销轴 211 依次穿过第一支撑柱 210 中部、扭簧 212 和第二支撑柱 310 中部，销轴 211 通过螺母 311 锁紧。扭簧 212 的两端分别抵靠在第一支撑柱 210 和第二支撑柱 310 的外表面上。可选地，也可以在第一支撑柱 210 和第二支撑柱 310 的相对两个面上设置孔，扭簧 212 的两端分别抵靠在孔内。销轴 221 依次穿过第一支撑柱 220 中部、扭簧 222 和第二支撑柱 320 中部，销轴 221 通过螺母 321 锁紧。扭簧 222 的两端分别抵靠在第一支撑柱 220 和第二支撑柱 320 的外表面上。可选地，也在第一支撑柱 220 和第二支撑柱 320 的相对两个面上设置孔，扭簧 222 的两端分别抵靠在孔内。

优选地，移动组件 110 上设置有沿所述第一水平方向延伸的多个限位孔 115，如图 6 所示。限位孔 115 用于使限位螺钉 114 穿过并固定在升降桌的桌板 500 上。示例性地，限位礼 115 呈长条状，限位螺钉 114 依次穿过限位套 113 和限位孔 115 之后固定在桌板 500 上。

第一支撑组件 200 的上端铰接于固定组件，第二支撑組件 300 的上端铰接于移动组件 110。通过移动组件 110 的移动，带动第一支撑组件 200 和第二支撑组件 300 之间的顶部夹角 α (见图 2) 改变，从而调节支撑结构的高度，实现升降桌的升降。在固定组件为分体式构件的实施例中，移动组件 110 可滑动地设置在第一固定组件 120 上，第一支撑组件 200 的上端可以铰接于第二固定组件 140。

可选地，移动组件 110 的两侧设置有滑轮。如图 6-7 所示，在移动組件 110 的两侧设置滑轮 111。第一固定组件 120 相对的内侧设置有滑道 121。滑道 121 沿第一水平方向延伸。滑轮 111 分别连接至相应的滑道 121。通过滑轮在滑道内移动，来实现移动组件 110 和第一固定组件 120 的可移动连接。移动组件 110 上设置有连接座 116，其用于铰接第二支撑组件 300

的上端，如图 6 所示。第二固定组件 140 上设置有连接座 141，其用于铰接第一支撑组件 200 的上端。

辅助动力件 150 连接在固定组件和移动组件 110 之间。辅助动力件 150 具有相对设置的第一端和第二端。辅助动力件 150 的第一端连接至固定组件，且第二端连接至移动组件 110。辅助动力件 150 可采用气弹簧。优选地，气弹簧可采用自锁型气弹簧。自锁型气弹簧能在行程中的任意位置停止，并且停止以后有很大的锁紧力。

根据本发明提供的支撑结构，由于第二支撑组件 3()() 的上端连接至顶连接组件 100 的移动组件 110，当对桌板 500 施加向下的力时，第二支撑组件 300 的上端在移动组件的带动下朝远离第一支撑组件 200 的上端的方向移动，第一支撑组件 200 与第二支撑组件 300 之间的顶部夹角α（见图 2）增大，辅助动力件 150 压缩，支撑结构整体高度下降，以满足坐姿需要。图 4 为该升降桌处于收纳状态时的示意图，收纳之后占地空间小，在同行业中能够达到很轻薄的状态，最优为 5CM 左右。需要升高桌板时，在第一支撑组件 200 与第二支撑组件 300 的铰接处的弹性部件的偏置作用下，顶部夹角α减小，支撑结构整体高度上升，以满足站姿需要。

优选地，该支撑结构还包括底框组件 400。第一支撑组件 200 的下端可移动地连接于底框组件 400。第二支撑组件 300 的下端铰接于底框组件 400。通过设置该底框组件 400，支撑结构 10 更加稳定、牢固。

示例性地，底框组件 400 包括相对设置的一对底横梁 430 和 440 以及相对设置的一对底端梁 410 和 420。底端梁 410 和 420 分别连接至底横梁 430 和 440 的两端。底横梁 430 和 440 沿第一水平方向延伸。第一支撑组件 200 的下端可滑动地连接于底横梁 430 和 440。第二支撑组件 300 的下端可枢转地连接于底端梁 410 或 420。底端梁 410 和 420 分别在两端封堵底横梁 430 和 440 的端部。可选地，可以通过螺纹紧固件将底端梁 410 和 420 固定至底横梁 430 和 440。

示例性地，第一支撑组件 200 还包括滑动件 213 和 223，如图 7 所示。滑动件 213 和 223 分别安装在第一支撑组件 200 下端的两侧，例如安装在第一支撑组件 200 的第一连接柱 230 的两端。底横梁 430 和 440 的相对的内侧设置有滑道 431 和 441。滑动件 213 和 223 连接至滑道 431 和 441。

优选地，固定组件还包括锁紧开关。锁紧开关包括扳手固定座 131、扳手 130 和传动构件 132。

扳手固定座 131 沿第一水平方向设置在固定组件的端部处。扳手固定座 131 例如设置在第一固定组件 120 上，或者与第一固定组件 120 和第二固定组件 140 均分体设置。辅助动力件 150 的第一端固定至扳手固定座 131。扳手 130 在锁紧位置和解锁位置之间可枢转地设置在扳手固定座 131 内。示例性地，扳手 130 可以通过销轴 133 可枢转地连接至扳手固定座 131。为了抓握方便，扳手 130 可以露出到桌板 500 的边缘之外。对升降桌执行升高和降低操作时，可以借力于桌板 500，即手掌在上、手指在下同时握住桌板 500 的边缘和扳手 130，使扳手 130 旋转。

示例性地，扳手 130 沿垂直于第一水平方向的第二水平方向延伸。扳手 130 的截面呈 L 形，如图 6 所示，扳手 130 具有水平段和竖直段。其中，所述水平段用于抓握，所述竖直段连接至传动构件 132。

传动构件 132 连接至扳手 130。扳手 130 旋转时，可以带动传动构件 132 沿第一水平方向移动。传动构件 132 移动，可以对辅助动力件 150 的第一端施加推力，以解锁辅助动力件 150 的自锁功能。需要说明的是，传动构件 132 可以直接对辅助动力件 150 施加推力，来解锁辅助动力件 150；或者，可选地，传动构件 132 通过中间部件间接地对辅助动力件 150 施加推力。

示例性地，传动构件 132 包括 T 形主体 132a、扳手连接部 132b 和动力件连接部 132"。T 形主体 132a 沿第一水平方向延伸。T 形主体 132a 沿第一水平方向具有大尺寸端和小尺寸端。卡钩 134 设置在所述大尺寸端和所述小尺寸端的连接处。扳手连接部 132b 设置在所述大尺寸端，并连接至扳手 130。动力件连接部 132c 设置在所述小尺寸端，并连接至辅助动力件 150。

优选地，锁紧开关还包括卡钩 134。卡钩 134 设置在传动构件 132 上。卡钩 134 在扳手 130 处于锁紧位置时能够卡合在底框组件 4()() 上，以实现收納锁紧。底框组件 400 上与卡钩 134 相对应的位置处可以设置有与卡钩 134 相适配的卡扣 421。卡扣 421 可以设置在底框组件 400 的与卡钩 134 位置相对应的底端梁 420 上。卡钩 134 卡合至卡扣 421 时，实现收纳状态

的锁紧。扳手 130 处于解锁位置时，能够解除与底框组件 400 的卡合。

在上述优选实施例中，辅助动力件 150 为具有自锁功能的自锁型气弹簧。辅助动力件 150 连接在传动构件 132 和移动组件 110 之间。扳手 130 处于解锁位置时能够解除辅助动力件 150 的自锁功能。

示例性地，扳手 130 从图 6 中所示的锁紧位置向上枢转至解锁位置时，传动构件 132 朝向第二固定组件 140 的方向移动，传动构件 132 例如按压自锁型气弹簧上的顶针，达到解锁自锁型气弹簧的目的。自锁型气弹簧解锁后可以根据需要伸缩。

针对上述示例性实施例，需要降低升降桌的高度时，向上转动扳手 130，扳手 130 旋转至解锁位置，解除辅助动力件 150 的自镇功能，对桌板 5()() 施加向下的外力时，顶部夹角 α 增大，升降桌高度降低，直至进入图 4 所示的状态。松开扳手 130，扳手 130 返回至锁紧位置，卡扣 421 卡合至卡钩 134，实现收納状态的锁紧。需要升高升降桌的高度时，将扳手 130 向上转动至解锁位置，解除卡扣 421 与卡钩 134 之间的卡掣，同时解除辅助动力件 150 的自锁功能，在扭簧 212 和 222 的作用下，第一支撑组件 200 与第二支撑组件 300 之间的顶部角度 α 减小，升降桌整体高度上升，以满足站姿需要，松开扳手 130。

图 8-14 从各个角度示出了根据本发明的另一实施倒的支撑结构的整体以及该支撑结构所包含的各个部件或部分。该实施例与图 1-7 所描述的实施例的主要区别在于顶连接組件 100'，因此在描述该另一实施倒时与上述实施例相同或相似的部件将使用相同的附图标记，并且不再对这些相同或相似的部件进行详细赘述。

顶连接組件 100' 包括固定組件和移动组件 110'。移动组件 110' 相对于固定組件沿第一水平方向可移动。所述第一水平方向为图 9 中箭头 A 所示的升降桌的长度方向。在图中所示的实施例中，固定组件是分体的，它包括沿第一水平方向间隔开设置的第一固定组件 120' 和第二固定組件 140'。

优选地，第一固定组件 120' 包括相对设置的一对第一固定件 122'、以及相对设置的一对第二固定件 124'，如图 8 和 13 所示。第一固定件 122' 的相对的内侧设置有第一滑道 126'，第二固定件 124' 的相对的内侧设置有第二滑道 128'。移动组件 110' 呈 Y 形，Y 形的移动組件 110' 沿着第一水平

方向具有大尺寸端和小尺寸端。移动组件 110' 的大尺寸端的两侧设置有第一滑动件 112', 移动组件 110' 的小尺寸端的两侧设置有第二滑动件 114'。第一滑动件 112' 可滑动地连接至第一滑道 126,, 第二滑动件 114,可滑动地连接至第二滑道 128。第一滑动件 112' 和第二滑动件 114,可以为滑轮和凸起等等。优选地,第一滑动件 112 和第二滑动件 114' 为凸起,以简化结构,减小升降桌处于收纳状态的厚度。采用 Y 形的移动组件 110' 的上述方案能够减轻支撑结构的自重,且由于滑动件均设置在移动组件 110 的端部,第一滑动件 112' 与第二滑动件 114' 之间的间距较大,因此可以使移动組件 110' 的运动更加稳定。

另外优选地,如图 8-14 所示,锁紧开关具有如下优选结构,锁紧开关包括扳手固定座 131'、扳手 130'、传动构件 132' 和枢转构件 135'。

扳手固定座 131' 沿着第一水平方向设置在固定组件的端部处,辅助动力件 150 的第一端固定至扳手固定座 131',如图 14 所示。扳手 130' 在锁紧位置和解锁位置之间可枢转地设置在扳手固定座 131' 内。传动构件 132' 连接至扳手 130',并由扳手 130' 带动沿第一水平方向移动。枢转构件 135' 的一端可枢转地连接至扳手固定座 131',且另一端在传动构件 132' 的推动下可推顶辅助动力件 150 的第一端,以解锁辅助动力件 150。由于枢转构件 135 增大了推顶辅助动力件 150 的力臂,因此用户以较小的力就能够转动扳手,进而具有良好的手感,提高用户体验。

传动构件 132,可以夹在桌板与扳手固定座 131'之间,由扳手固定座 131'限制在一定范围内沿第一水平方向做定向移动。示例性地,传动构件 132 上用于推动枢转构件 135' 的突起 134a' 突出到扳手固定座 131'的下方,其余部分可以均保持在桌板与扳手固定座 131'之间。

卡钩 134' 设置在传动构件 132' 的下方。卡钩 134' 在扳手 130' 处于锁紧位置时能够卡合至底框组件,且在扳手 130' 处于解锁位置时能够解除与底框组件的卡合。卡钩 134'的这部分功能与前述实施例相同,因此不再赘述。

针对上述示倒性实施例,需要降低升降桌的高度时,手掌按住桌面、手指扳动扳手 130',使扳手 130' 向上转动旋转至解锁位置,参见图 14,传动构件 132' 向左侧移动,其上的突起 134a' 推动枢转构件 135',使得枢转构件 135' 推顶枢转构件 135' 的第一端 (例如推顶自锁型气弹簧上的顶

针），解除辅助动力件 150 的自锁功能。此时，对桌板施加向下的外力时，顶部夹角α增大，辅助动力件 150 压缩，升降桌高度降低，直至进入图 11-12 所示的状态。松开扳手 130，扳手 130 返回至锁紧位置，在返回过程中，卡扣 421 卡合至底框组件，实现收纳状态的锁紧。需要升高升降桌的高度时，将扳手 130 向上转动至解锁位置，解除卡扣 421 与卡钩 134 之间的卡掣，同时解除辅助动力件 150 的自锁功能，在扭簧 212 和 222 的作用下，第一支撑组件 200 与第二支撑组件 300 之间的顶部角度α减小，升降桌整体高度上升，以满足站姿需要，松开扳手 130。

根据本发明的另一方面，还提供一种升降桌，升降桌包括如上所述的支撑结构。

本发明的支撑结构的优点在于：支撑緩冲效果极好，收放自如。由于垂直下降重力极大容易造成夹伤风险，升降桌采用本发明的支撑结构后，不但能防止夹伤风险，同时收起时不会产生噪音；此外升降桌基于弹性部件和辅助动力件的作用，还能够自动上升，减少人为干预，展开时方便快捷，给用户使用带来了方便。

本实用新型提供的锁紧开关的锁紧效果极好，收纳之后不会发生任何形变，锁紧牢固；在起升过程中通过辅助动力件的作用，通过第一支撑组件与第二支撑组件的铰接处的弹性部件形成张力作用，同时，由于第二支撑组件的上端通过辅助动力件滑动连接于顶连接组件的另一端，使得支撑结构的支撑緩冲效果极好，牧放自如，此外升降桌基于弹性部件和辅助动力件的作用，还能够自动上升，无需人为干预；展开时方便快捷，给用户使用带来了方便。

本发明已经通过上述实施例进行了说明，但应当理解的是，上述实施例只是为了举例和说明的目的，而非意在将本发明限制于所描述的实施例范围内。此外本领域技术人员可以理解的是，本发明并不局限于上述实施例，根据本发明的教导还可以做出更多种的变型和修改，这些变型和修改均落在本发明所要求保护的范围以内。本发明的保护范围由附属的权利要求书及其等效范围所界定。

权 利 要 求 书

1、一种用于升降桌的支撑结构，其特征在于，包括：

第一支撑组件和第二支撑组件，所述第一支撑组件与所述第二支撑组件铰接形成X型；

顶连接组件，所述顶连接组件包括固定组件和相对于所述固定组件沿第一水平方向可移动的移动组件，其中，所述第一支撑组件的上端铰接于所述固定组件，所述第二支撑组件的上端铰接于所述移动组件；

弹性部件，所述弹性部件在所述第一支撑组件与所述第二支撑组件的铰接处设置在两者之间，用于提供使所述第二支撑组件的上端施加朝向所述第一支撑组件的上端移动的偏置力；以及

辅助动力件，所述辅助动力件的第一端连接至所述固定組件，且所述辅助动力件的与所述第一端相对的第二端连接至所述移动組件。

2、如权利要求1所述的支撑结构，其特征在于，所述第一支撑组件与所述第二支撑组件通过销轴铰接，所述弹性部件包括扭簧，所述扭簧套设在所述销轴上且位于所述第一支撑组件与所述第二支撑组件之间，所述扭簧的两端分别抵靠所述第一支撑组件与所述第二支撑组件。

3、如权利要求1所述的支撑结构，其特征在于，所述固定组件包括沿所述第一水平方向间隔开设置的第一固定组件和第二固定组件；

所述移动组件可滑动地设置在所述第一固定组件上，所述第一支撑组件的上端铰接于所述第二固定组件。

4、如权利要求3所述的支撑结构，其特征在于，所述第一固定组件包括相对设置的一对第一固定件、以及相对设置的一对第二固定件，所述第一固定件的相对的内侧设置有第一滑道，所述第二固定件的相对的内侧设置有第二滑道，

所述移动组件呈Y形，Y形的所述移动组件沿着所述第一水平方向具有大尺寸端和小尺寸端，所述移动组件的大尺寸端的两侧设置有第一滑动件，所述移动组件的小尺寸端的两铜设置有第二滑动件，所述第一滑动件可滑动地连接至所述第一滑道，所述第二滑动件可滑动地连接至所述第二滑道。

5、如权利要求 1 所述的支撑结构，其特征在于，所述第一支撑组件包括沿第二水平方向间隔开设置两个第一支撑柱以及第一连接柱，所述第一连接柱连接在所述第一支撑柱的底部之间，以形成 U 形结构，其中所述第二水平方向垂直于所述第一水平方向。

6、如权利要求 5 所述的支撑结构，其特征在于，所述第二支撑组件包括沿所述第二水平方向间隔开设置两个第二支撑柱以及第二连接柱，所述第二连接柱连接在所述第二支撑柱的底部之间，以形成 U 形结构。

7、如权利要求 1 所述的支撑结构，其特征在于，还包括底框组件，所述第一支撑组件的下端可移动地连接于所述底框组件，所述第二支撑组件的下端铰接于所述底框组件。

8、如权利要求 7 所述的支撑结构，其特征在于，所述底框组件包括相对设置的一对底横梁以及相对设置的一对底端梁，所述一对底端梁分别连接至所述一对底横梁的两端，所述一对底横梁沿所述第一水平方向延伸，其中

所述第一支撑组件的下端可滑动地连接于所述一对底横梁；

所述第二支撑组件的下端可枢转地连接于所述一对底端梁中的一个。

9、如权利要求 8 所述的支撑结构，其特征在于，所述第一支撑组件还包括第三滑动件，所述第三滑动件设置在所述第一支撑组件的下端的两侧，

所述一对底横梁的相对的内侧设置有第三滑道，所述第三滑动件连接至所述第三滑道。

10、如权利要求 7 所述的支撑结构，其特征在于，所述固定组件还包括锁紧开关，所述锁紧开关包括：

扳手固定座，所述扳手固定座沿着所述第一水平方向设置在所述固定组件的端部处，所述辅助动力件的第一端固定至所述扳手固定座；

扳手，所述扳手在锁紧位置和解锁位置之间可枢转地设置在所述扳手固定座内；以及

传动构件，所述传动构件连接至所述扳手，并由所述扳手带动沿所述第一水平方向移动，用于对所述辅助动力件的第一端施加推力而解锁所述

辅助动力件。

11、如权利要求 10 所述的支撑结构，其特征在于，所述扳手沿垂直于所述第一水平方向的第二水平方向延伸，所述扳手的截面呈 L 形，所述扳手具有水平段和竖直段，所述水平段用于抓握，所述竖直段连接至所述传动构件。

12、如权利要求 10 所述的支撑结构，其特征在于，所述锁紧开关还包括枢转构件，所述枢转构件的一端可枢转地连接至所述扳手固定座，且另一端在所述传动构件的推动下可推顶所述辅助动力件的第一端，以解锁所述辅助动力件。

13、如权利要求 10 所述的支撑结构，其特征在于，所述镇紧开关还包括卡钩，所述卡钩设置在所述传动构件上，所述卡钩在所述扳手处于所述锁紧位置时能够卡合至所述底框组件，且在所述扳手处于所述解锁位置时能够解除与所述底框組件的卡合。

14、如权利要求 1 所述的支撑结构，其特征在于，所述辅助动力件为自锁型气弹簧。

15、一种升降桌，包括桌板和支撑所述桌板的支撑结构，其特征在于，所述支撑结构为权利要求 1-14 中任意一项所述的支撑结构，所述桌板固定在所述顶连接组件的所述固定组件上。

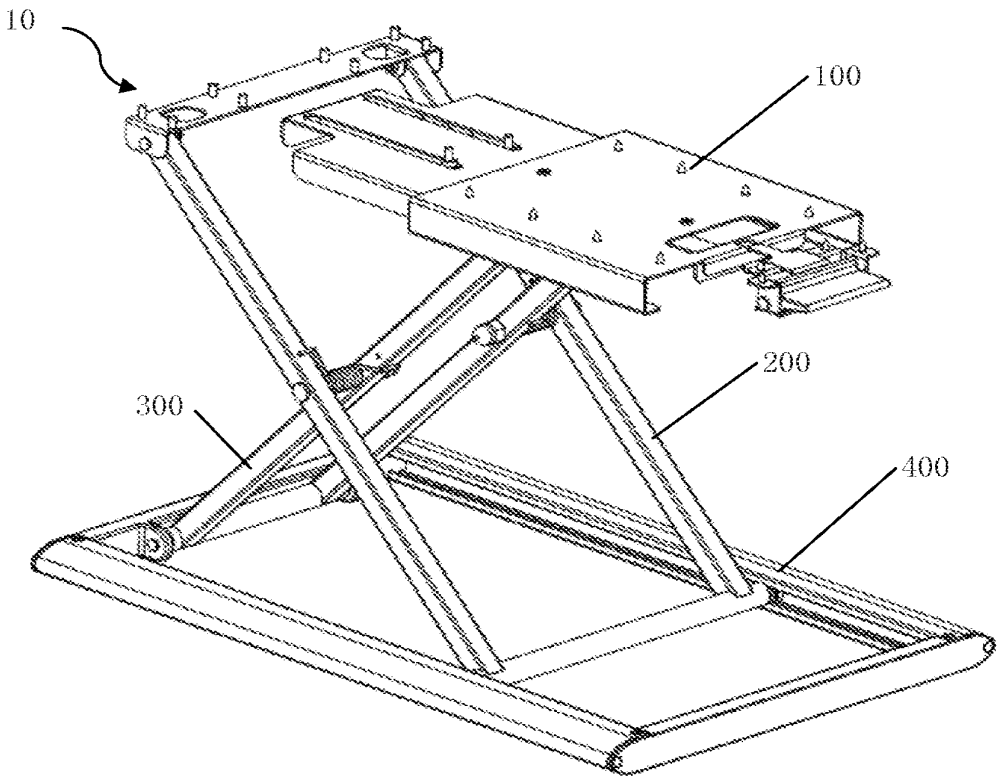


图 1

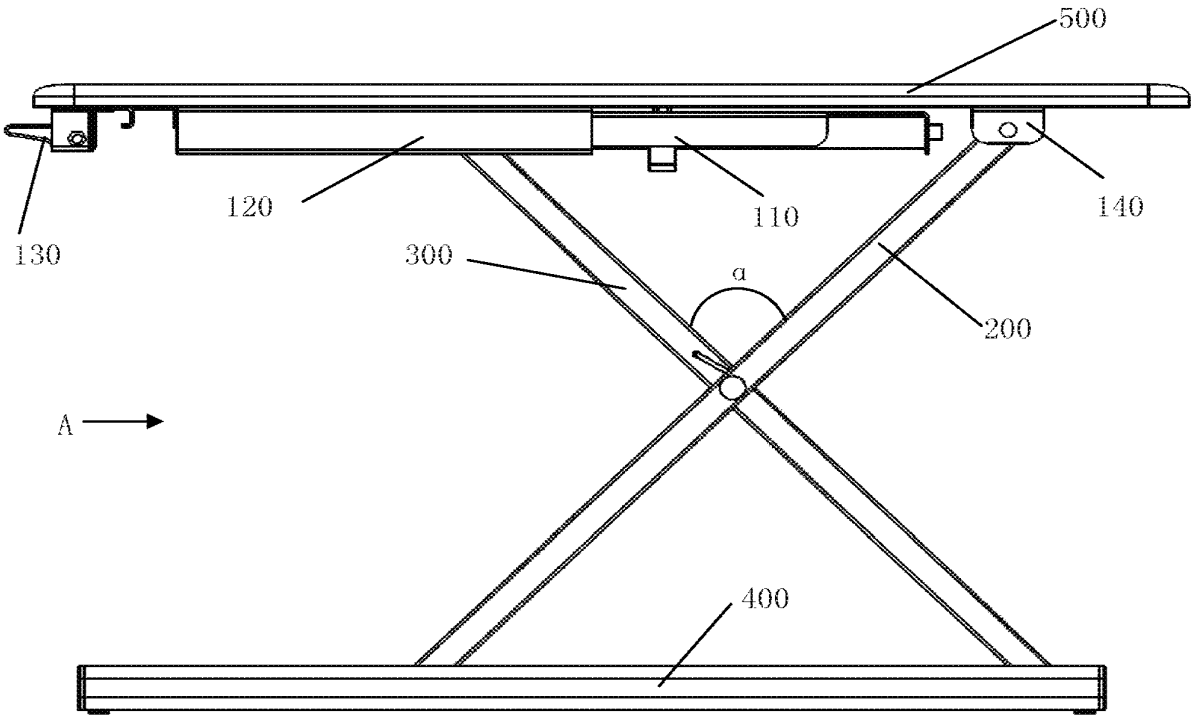


图 2

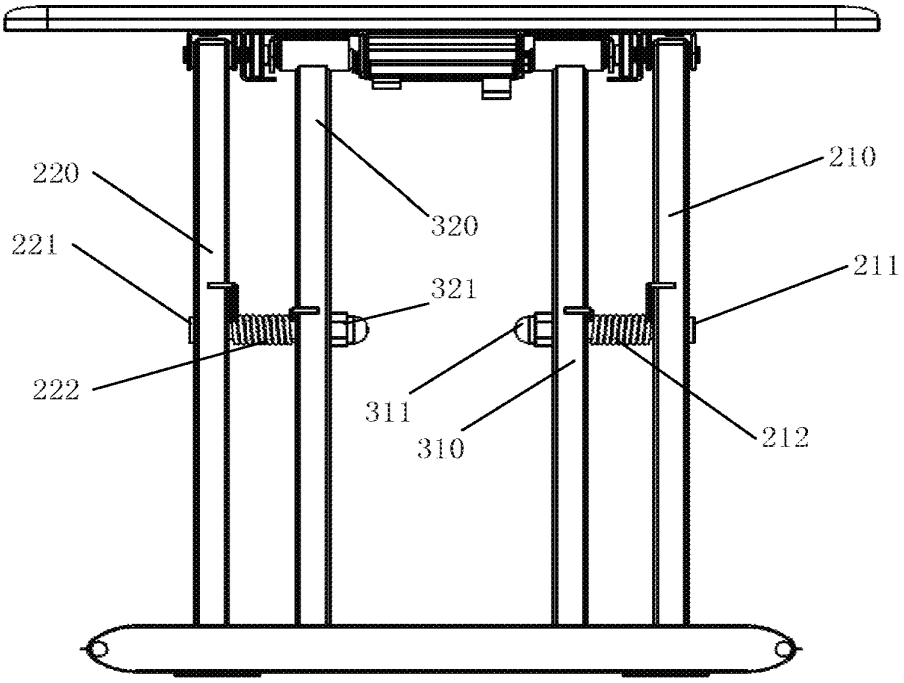


图 3

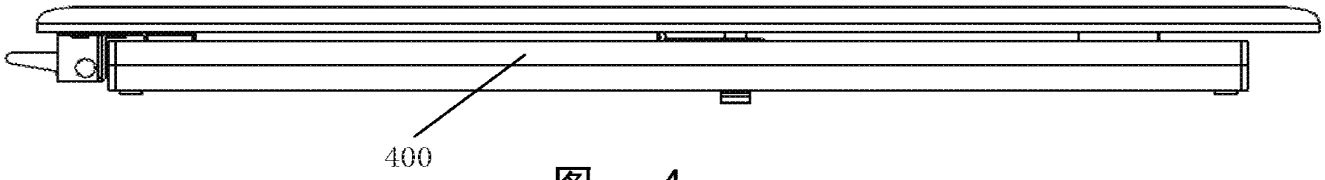


图 4

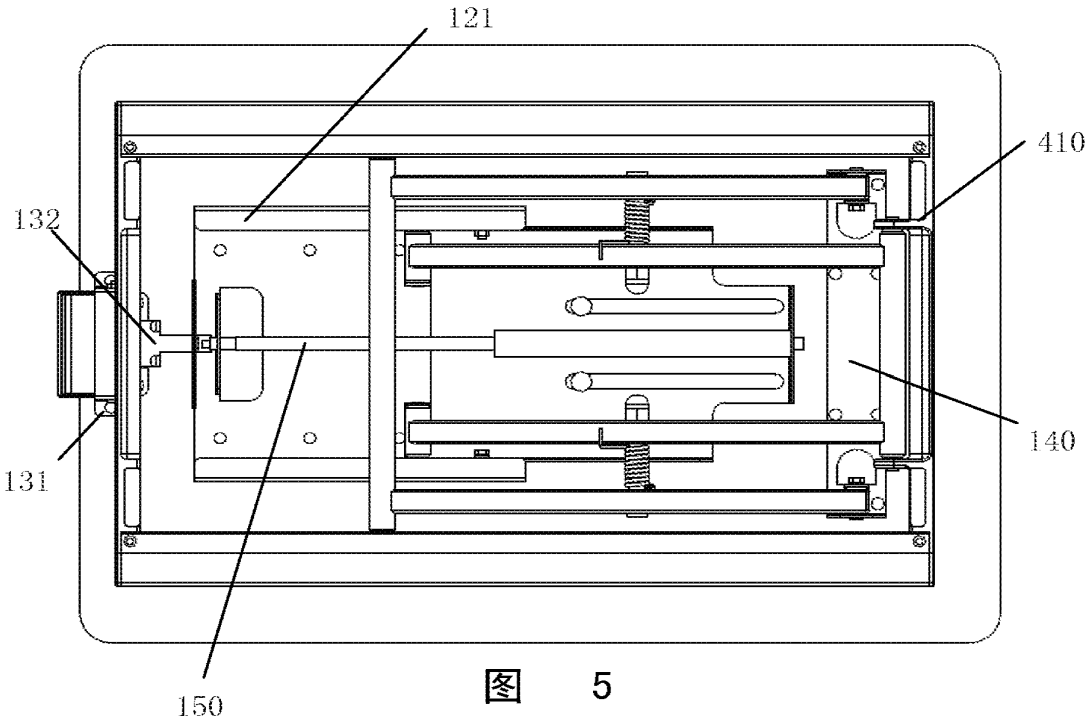

121
410
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图 5

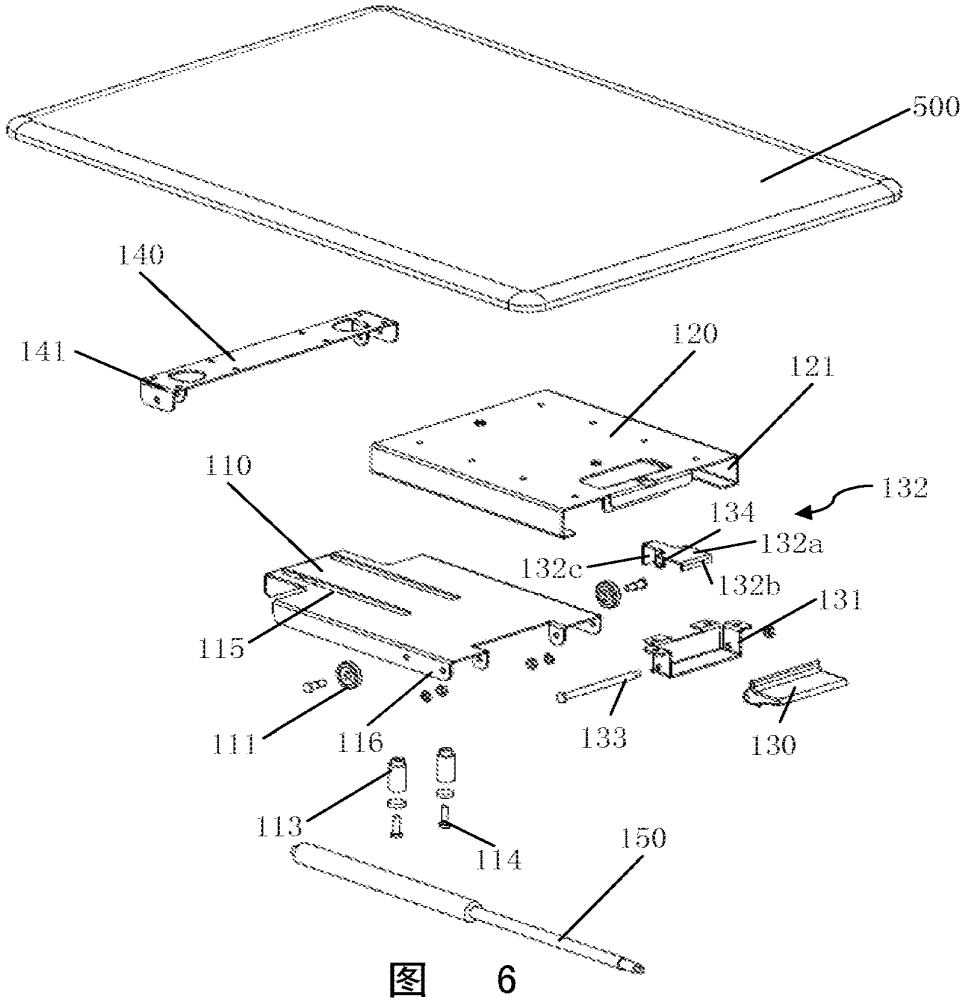

500
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132a
132c
132b
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114
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图 6

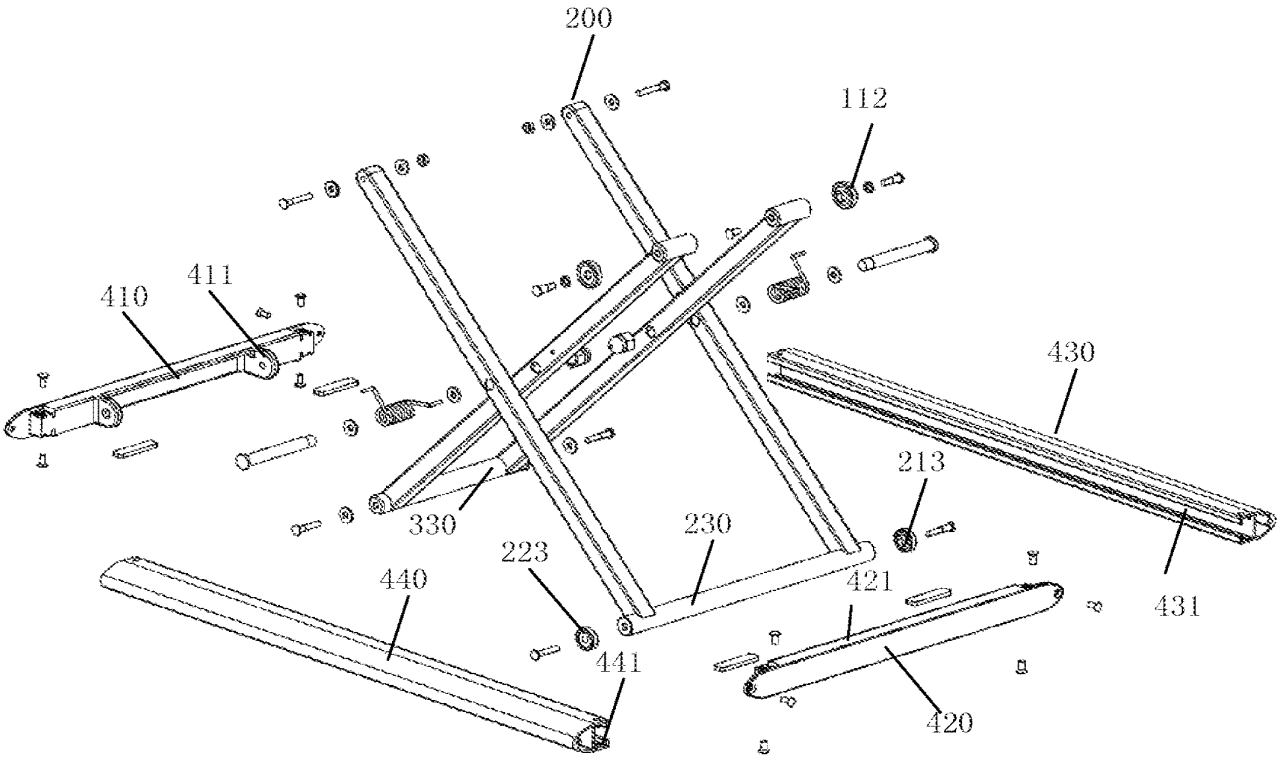


图 7

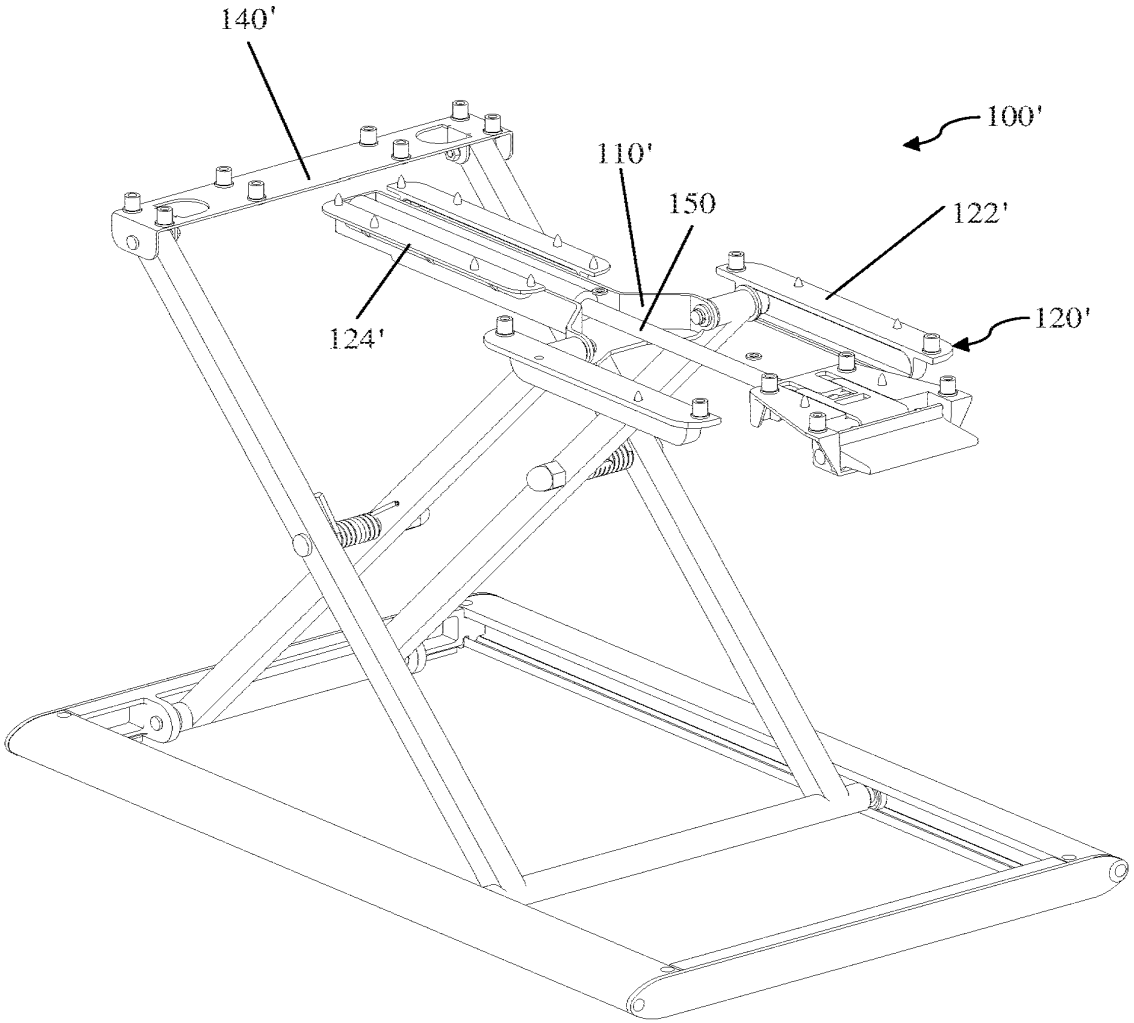


图 8

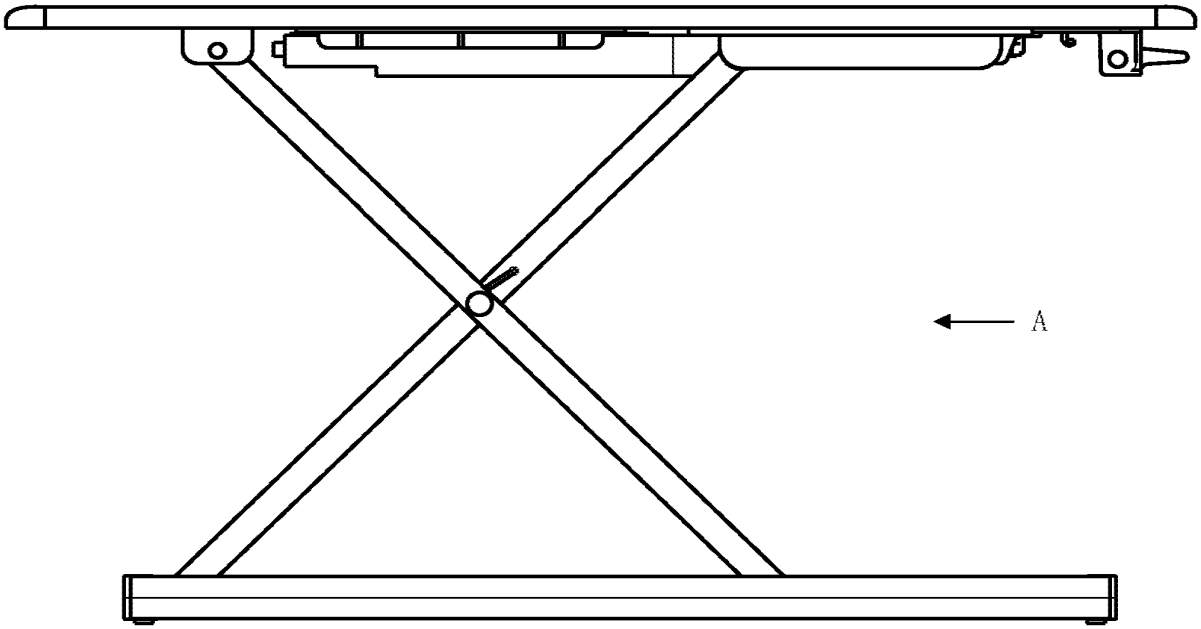


图 9

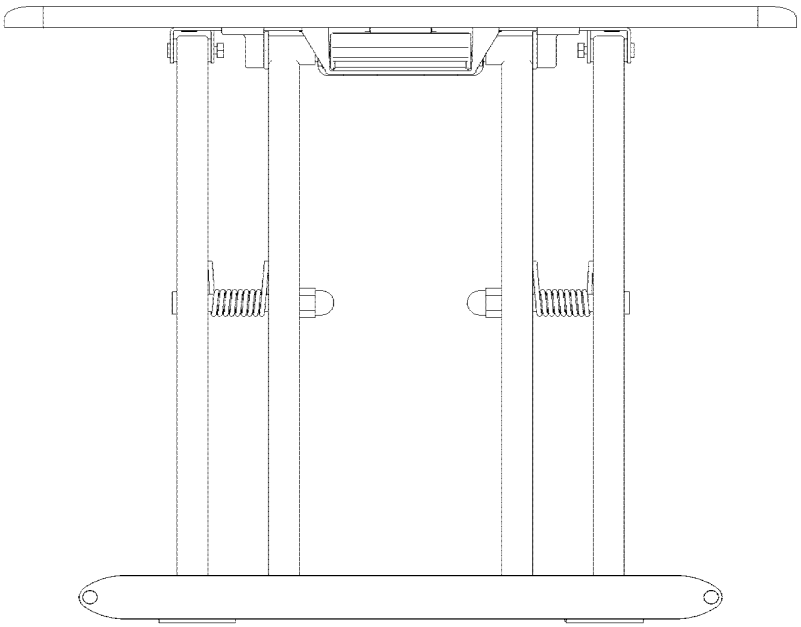


图 10

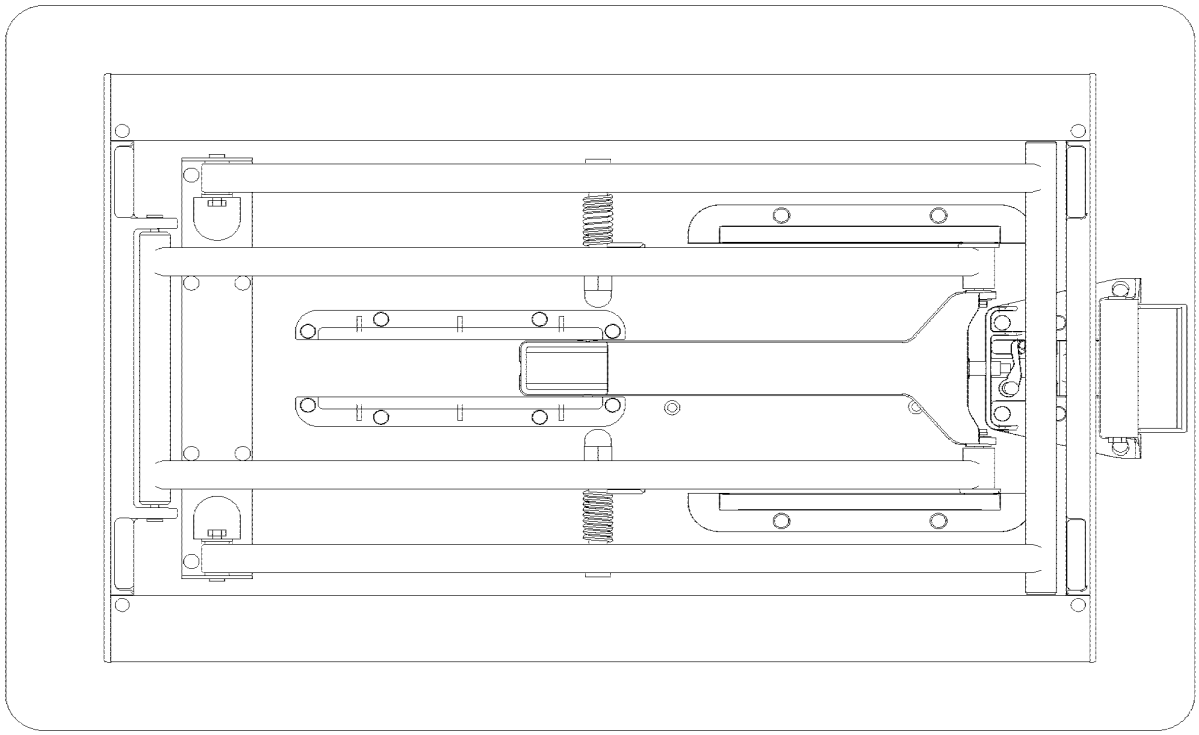


图 11



图 12

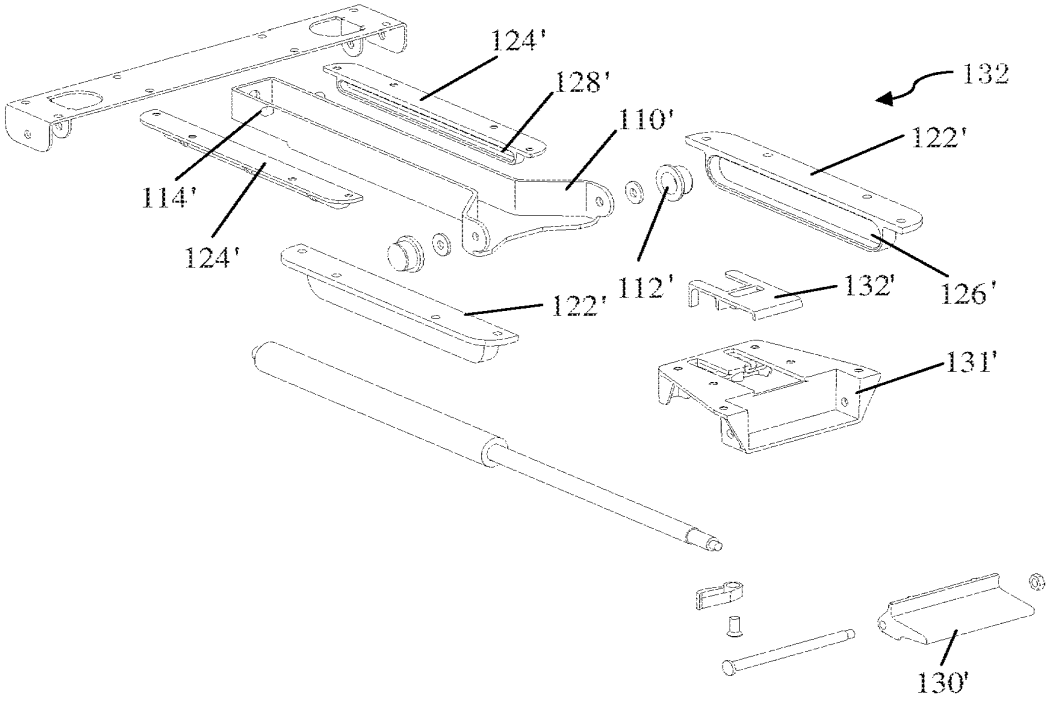


图 13

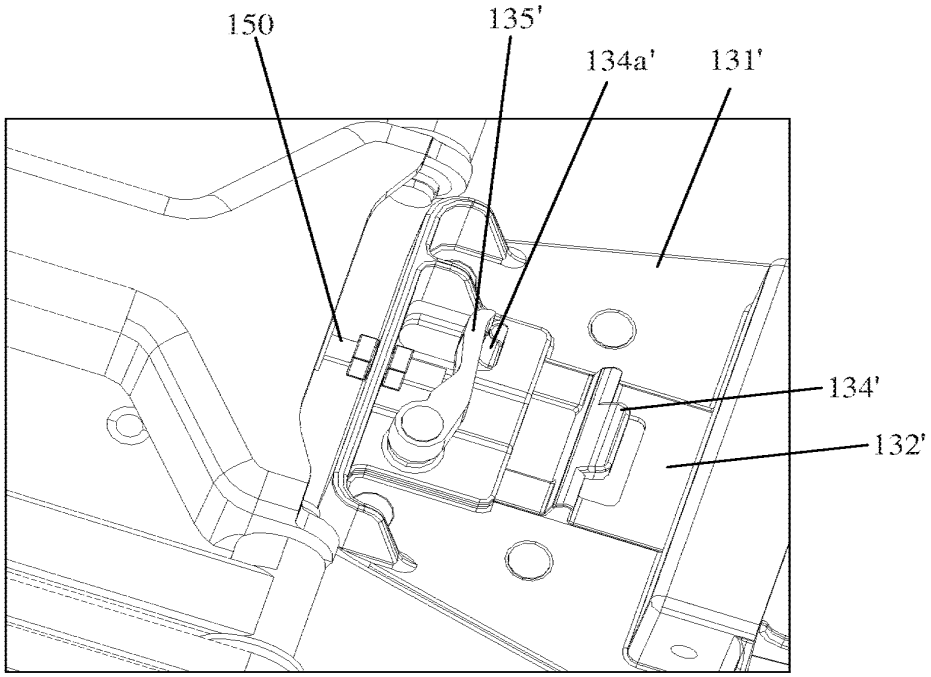


图 14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/093294

A. CLASSIFICATION OF SUBJECT MATTER

A47B 13/02(2006.01)i; A47B 9/16(2006.01)n

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)

A47B

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

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

CNABS, CNTXT, CNKI, VEN: 桌, 升降, 张力, 偏置力, 扭簧, 气弹簧, 锁止, 锁定, 锁紧, 扳手, 卡钩, 枢转, table, desk, lifting, tension, gas spring, bias force, torsional spring

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 106473451 A (I-LIFT EQUIPMENT LTD.) 08 March 2017 (2017-03-08) description, paragraphs 0004-001 1	1-3, 5-8, 14, 15
Y	CN 102715729 A (HANGZHOU LANDA CRAFTS CO., LTD.) 10 October 2012 (2012-10-10) figure 2	1-3, 5-8, 14, 15
PX	CN 107149286 A (CHEN, GONG) 12 September 2017 (2017-09-12) description, pages 1-2	1-3, 5-8, 14, 15
A	CN 105342138 A (SHENZHEN MINICUTE TECHNOLOGY CO., LTD.) 24 February 2016 (2016-02-24) entire document	1-15
A	CN 105901924 A (ZHEJIANG JIAYI INDUSTRIAL CO., LTD.) 31 August 2016 (2016-08-31) entire document	1-15
A	WO 20161371 19 A1 (SKE CO., LTD.) 01 September 2016 (2016-09-01) entire document	1-15

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"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)

"O" document referring to an oral disclosure, use, exhibition or other means

"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 September 2018	30 September 2018

Name and mailing address of the ISA/CN	Authorized officer
State Ditellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088 China	
Facsimile No. (86-10)62019451	Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Liformation on patent family members

International application No.
PCT/CN2018/093294

Patent document cited in search report	Publication date (day/mo nth/year)	Patent family member(s)	Publication date (day/month/year)
CN 106473451 A	08 March 2017	None	
CN 102715729 A	10 October 2012	CN 102715729 B	21 May 2014
CN 107149286 A	12 September 2017	None	
CN 105342138 A	24 February 2016	None	
CN 105901924 A	31 August 2016	None	
WO 2016137119 A1	01 September 2016	JP 5950172 B1	13 July 2016
		US 9480332 B2	01 November 2016
		KR 101527121 B1	10 June 2015
		JP 2016159140 A	05 September 2016
		US 2016249737 A1	01 September 2016

Form PCT/ISA/210 (patent family annex) (January 2015)

国际检索报告

国际申请号
PCT/CN2018/093294

A. 主题的分类

A47B 13/02 (2006.01) i; A47B 9/16 (2006.01) n

按照国际专利分类 (IPC) 或者同时按照国家分类和 IPC 两种分类

B. 检索领域

检索的最低限度文献 (标明分类系统和分类号)

A47B

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库 (数据库的名称，和使用的检索词 (如使用))

CNABS, CNTXT, CNKI, VEN: 桌，升降，张力，偏置力，扭簧，气弹簧，锁止，锁定，锁紧，扳手，卡钩，枢转，table, desk, lifting, tension, gas spring, bias force, torsional spring

C 相关文件

类 型*	引用文件，必要时，指明相关段落	相关的权利要求
Y	CN 106473451 A (无锡爱一力机械有限公司) 2017 年 3月 8日 (2017-03-08) 说明书第0004-001 1段	1-3, 5-8, 14, 15
Y	CN 102715729 A (杭州蓝达工艺制品有限公司) 2012 年 10月 10日 (2012-10-10) 附图2	1-3, 5-8, 14, 15
PX	CN 107149286 A (陈工) 2017 年 9月 12日 (2017-09-12) 说明书第1-2 页	1-3, 5-8, 14, 15
A	CN 105342138 A (深圳米乔科技有限公司) 2016 年 2月 24日 (2016-02-24) 全文	1-15
A	CN 105901924 A (浙江嘉宜实业有限公司) 2016 年 8月 31日 (2016-08-31) 全文	1-15
A	WO 2016137119 A1 (SKE CO LTD) 2016 年 9月 1日 (2016-09-01) 全文	1-15

□ 其余文件在C栏的续页中列出。

☑ 见同族专利附件。

* 引用文件的具体类型：

"A" 认为不特别相关的表示了现有技术一般状态的文件

"E" 在国际申请日的当天或之后公布的在先申请或专利

"L" 可能对优先权要求构成怀疑的文件，或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件 (如具体说明的)

"O" 涉及口头公开、使用、展览或其他方式公开的文件

"P" 公布日先于国际申请日但迟于所要求的优先权日的文件

"T" 在申请日或优先权日之后公布，与申请不相抵触，但为了理解发明之理论或原理的在后文件

"X" 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

"Y" 特别相关的文件，当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时，要求保护的发明不具有创造性

"&" 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
2018 年 9月 18日	2018 年 9月 30日

ISA/CN 的名称和邮寄地址	受权官员
中华人民共和国国家知识产权局 (ISA/CN) 中国北京市海淀区蓟门桥西土城路6号 100088	郑瑜
传真号 (86-10) 62019451	电话号码 62084086

表 PCT/ISA/210 (第2页) (2015年1月)

国际检索报告
关于同族专利的信息

国际申请号
PCT/CN2018/093294

检索报告引用的专利文件			公布日 (年/月/日)	同族专利			公布日 (年/月/日)
CN	106473451	A	2017年3月8日	无			
CN	102715729	A	2012年10月10日	CN	102715729	B	2014年5月21日
CN	107149286	A	2017年9月12日	无			
CN	105342138	A	2016年2月24日	无			
CN	105901924	A	2016年8月31日	无			
WO	2016137119	A1	2016年9月1日	JP	5950172	B1	2016年7月13日
				US	9480332	B2	2016年11月1日
				KR	101527121	B1	2015年6月10日
				JP	2016159140	A	2016年9月5日
				US	2016249737	A1	2016年9月1日

表 PCT/ISA/210 (同族专利附件) (2015年1月)

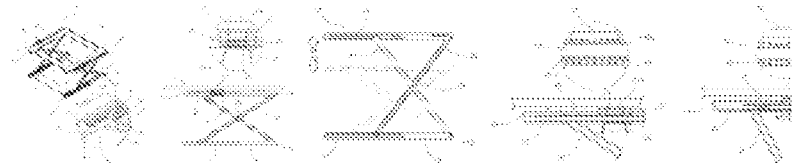
Patents

Stand for adjusting height

Abstract

The present invention relates to a height-adjustable stand including: a pair of leg units with a guide hole in one side in a longitudinal direction; a supporter unit having guide holes corresponding to the guide holes of the pair of the leg units and supporting members in both lateral surfaces; supports having a first support with one end connected and installed in the guide holes of the pair of the leg units and the other end fixated to the supporter unit, a second support formed into a form in an X shape with the first support and having one end connected and installed in the pair of the leg units and the other end connected and installed in the guide holes of the supporter unit, and additionally a connection shaft connecting the first and second support; rod members connected and installed in one end of the second support, covering the supporting member of the supporter unit, and installed to slide; and fixating units formed in one side of the rod member and formed to fixate and release the rod members after adjusting the height according to the operation of the supporters. According to this, the present invention provides a structure capable of adjusting the height of the stand by simply pressing the stand with a user's hand, thereby enabling the user to use a desk, a monitor, a laptop, and the like after adjusting the height of the object. In addition, the user is capable of precisely adjusting the height of the stand according to a height of the user such as a worker, a student, and the like, thereby efficiently working and studying. At the same time, an effect of preventing scoliosis by enabling the user to relax the tension on a waist is obtained.

Images (7)



KR20160074221A

South Korea

Download PDF Find Prior Art Similar

Other languages: Korean

Inventor: 정대훈

Worldwide applications

2014 KR

Application KR1020140183275A events

2014-12-18 Application filed by 정대훈

2014-12-18 Priority to KR1020140183275A

2016-06-28 Publication of KR20160074221A

2017-02-15 Application granted

2017-02-15 Publication of KR101707711B1

Info: Patent citations (4), Cited by (8), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Classifications

≋ A47B9/16 Tables with tops of variable height with means for, or adapted for, inclining the legs of the table for varying the height of the top, e.g. with adjustable cross legs

View 6 more classifications

Claims (4)

Hide Dependent translated from Korean

A pair of leg portions 10 formed with guide holes 11 in one longitudinal direction,

A pedestal 20 having guide holes 21 at positions corresponding to the guide holes 11 of the pair of legs 10 and having support members 22 formed on both sides thereof,
The first end is connected to the guide hole 11 of the pair of leg portions 10 and the other end is fixed to the receiving portion 20. The first end 31 is connected to the first end 31 and the X- A second support base 32 having one end connected to the pair of legs 10 and the other end connected to the guide hole 21 of the support unit 20, And a connection shaft 33 connecting the second support table 32 and the second support table 32,
A rod member 40 connected to one end of the second support base 32 and slidably mounted on the support member 22 of the support base 20,
Wherein the fixing part is provided at one side of the rod member and is provided with a fixing part for fixing and releasing the rod member after adjusting the height according to the action of the supporting part. Possible pedestal. The method according to claim 1,
The fixing portion 50 is formed on one side of the rod member 40 and has a through hole 51a formed on one surface thereof for allowing the support member 22 to pass therethrough and a stopper 51b having a space portion 51b formed on the upper surface thereof A through hole 52a is formed in the stopper 51 so that the support member 22 can be inserted therethrough and an upper portion of the through hole 52a is located in the space 51b of the stopper 51, A pair of fixing pieces 52 including a pair of fixing pieces 52b and an elastic member 53 disposed between the pair of fixing pieces 52 and surrounding the supporting member 22. [Height adjustable pedestal. 3. The method of claim 2,
And a toothed portion (22-1) is formed on an outer circumferential surface of the support member (22) to fix the fixing piece (52). The method according to claim 1,
Further comprising a tension member (60) connected to one end of the support member (22) and the other end of the second support base (32).

Description

translated from Korean

{Stand for adjusting height}

The present invention relates to a height adjustable pedestal, and more particularly, it relates to a pedestal which is adjustable in height according to the height of a user, such as an office worker or a student, by simply using a pedestal as a pedestal for a desk desk, a monitor, So that the company can work more efficiently, and at the same time, in processing various kinds of tasks, it is possible to relieve the tension of the waist by treating it by standing or sitting, The present invention relates to a pedestal capable of height adjustment.

Generally, a desk is widely used in daily life for business, study, or work. Especially, in case of business use or work use, it has various forms and functions according to the needs of users.

Usually, the desk is provided at a fixed height without regard to the user's body shape. Therefore, the desk is inconvenient for a person with a small or large height, and inconvenience due to the height of a fixed desk when using a computer or other office work .

When using a desk having a fixed height as described above, it is necessary to adjust the height to a suitable height by using a chair. In the case of a tall user, the sitting position is not easy due to the length of the leg. When the user is sitting in a chair and living for a long time due to learning using a top plate, there is a problem that a student in the growing stage experiences considerable difficulty in developing the body including the spine.

However, recently introduced desks are equipped with a height adjusting device for the upper plate so that a user having different body shapes can adjust the height of the upper plate according to his / her body shape so that the user can adjust the height of the upper plate to the height of the chair So that it can be used.

In the prior art, the patent document 10-2009-0028042 "height adjustable multifunction desk" was introduced.

The structure of the desk will be briefly described.

The elevating bar having a plurality of fixing grooves inserted into the fixing bars of the support legs is vertically movable up and down and is inserted into the fixing grooves of the elevating bars to adjust the height of the elevating bars. So that the height of the upper plate is adjusted according to the height of the user, and then the elevating bar and the fixing bar are fixed using the fixing pins.

However, in the desk having the above-described structure, there is a problem that it is troublesome to insert or release the fixing pins every time when adjusting the height of the upper plate. In addition, a fixing pin is inserted into the fixing groove The height of the portion between the fixing grooves can not be adjusted. Therefore, there is a limit in adjusting the height precisely.

Patent document 10-2009-0028042 "Height-adjustable multifunction desk"

The object of the present invention to solve the above-mentioned problems of the prior art is to more easily adjust the height of the user and to adjust the height precisely to the height of the user so that the worker can work more effectively in a comfortable posture If you are a fast-paced student, you can adjust the height to suit your physical condition and adjust your height to prevent your spine from flexing, scraping or slowing growth. To provide a pedestal.

According to an aspect of the present invention,

A pair of leg portions formed with a guide hole in a longitudinal direction of one side thereof, a support portion formed with guide holes at positions mutually corresponding to the pair of leg portion guide holes and having support members formed on both sides thereof, The first support is connected to the guide hole and the other end is fixed to the support portion. The first support is connected to the pair of legs at one end, and the other end is connected to the guide hole of the support portion. And a connection shaft connected to the first support and the second support. The first support is connected to one end of the second support, and the support member of the support is enclosed and slidably installed. And a fixing unit provided at one side of the rod member and provided for fixing and releasing the rod member after adjusting the height according to the action of the support member And a gong.

In addition, the fixing portion may include a rod member connected to the other end of the second support member, the rod member being surrounded by a support member of the support portion, a through hole connected to the rod member, A pair of fixing pieces provided on the inner side of the stopper and having a through hole to allow the supporting member to pass therethrough and an upper portion having a tight contact portion located in a space portion of the stopper, And an elastic member which is located between the fixing pieces and which surrounds and supports the supporting member.

Further, the outer peripheral surface of the support member is characterized in that a toothed portion is formed to fix the fixed piece.

The apparatus may further include a tension member connected to one end of the support member and the other end of the second support.

As described above, the present invention provides a structure in which the height of the pedestal can be adjusted by a user's simple pressing by hand so that the height of each article such as a desk, a monitor, and a notebook is adjusted and used, Therefore, it is possible to more efficiently perform the work and study of the company, and at the same time, relieve the tension of the lower back and prevent scoliosis.

1 is a perspective view illustrating a pedestal capable of height adjustment according to the present invention;
Fig. 2 is an exploded view of the fixing part according to the present invention; Fig.
3 is a side view illustrating a height adjustment process of the pedestal according to the present invention.
4 is a process diagram showing a process 1 in which the height of the pedestal according to the present invention is adjusted by the fixing unit after the height adjustment.
FIG. 5 is a process diagram showing a process 2 in which the height of the pedestal according to the present invention is adjusted by the fixing unit. FIG.
6 is a side view showing the action of the tension member according to the present invention.
7 is a view for use as a monitor or a notebook stand according to the present invention.

Hereinafter, preferred embodiments of the present invention will be described with reference to the accompanying drawings.

The present invention is characterized in that a pair of leg portions 10 formed with guide holes 11 in one longitudinal direction and guide holes 21 at positions corresponding to the pair of leg portions 10 And the other end of which is fixed to the receiving portion 20 and the other end of which is fixed to the receiving portion 20 The first support 31 and the first support 31 are formed in an X shape and one end is connected to the pair of legs 10 and the other end is connected to the guide hole 21 And a connection shaft 33 connecting the first support 31 and the second support 32. The second support 32 is connected to the first support 31 and the second support 32, A rod member 40 connected to one end of the rod member 40 and being slidably mounted on the support member 22 of the support member 20;) On the action of After adjusting the height referred to, it consists of the rod member 40 to the fixing section 50 designed to secure and release.

Hereinafter, the constituent elements and the operation of the present invention will be described in detail.

As shown in Figs. 1 to 3,

The present invention largely comprises a pair of leg portions 10, a receiving portion 20, a supporting member 30, a rod member 40, and a fixing portion 50.

The pair of legs 10 are formed with space portions on both sides with respect to the partition wall 14 and guide holes 11 are formed in the longitudinal direction from both ends of the partition walls 14 and the longitudinal direction, A pivot hole 15 is formed in the other end of each of the side surfaces and the barrier ribs 14 so that the second support table 32 can rotate.

The support portion 20 is located above the pair of leg portions 10 and has a guide hole 11 and a partition wall 14 formed on both sides of the pair of leg portions 10 on both sides, A guide hole 21 and a partition wall 24 are formed and a support member 22 having a bar shape is connected to both sides.

The support 30 includes a first support 31 and a second support 31. The support 31 includes a first support 31 and a second support 31. The first support 31 is rotatably supported by the support 20, And one end of which is rotatably mounted on the pivot hole 15 formed at the other end of the pair of legs 10 and the other end of which is rotatably supported by the support portion 20 A second support base 32 provided at a center of the first support base 31 and the second support base 32 so as to be rotatable in an X shape between the ends of the respective support bases 30, And a connecting shaft 33 installed to provide a function of opening or closing the connecting shaft 33.

The rod member 50 is provided in the form of a circular pipe around a support member 22 provided on both sides of the support portion 20. The rod member 50 rides on the outer peripheral surface of the support member 22 in accordance with the action of the second support base 32, Horizontally and horizontally.

The fixing portion 50 is integrally formed or detachably connected to one end of the rod member 40. A through hole 51a is formed at one side of the fixing member 50 so that the supporting member 22 can pass therethrough. The stopper 51 is formed inside the stopper 51 and has a through hole 52a so that the support member 22 can be inserted or fixed. A pair of fixing pieces 52 which are further provided at the upper portion and which are in close contact with the inner surface of the space portion 51b of the stopper 51 to fix the supporting member 22, And an elastic member 53 provided between the pair of fixing pieces 52 and adapted to restore the mutual action of the pair of fixing pieces 52. [

On the other hand, when the fixing piece 52 is provided,

The through hole 52a formed in the fixing piece 52 is formed to be larger than the outer diameter of the supporting member 22 and the pair of fixing pieces 52 are provided symmetrically with each other, The elastic member 53 provided between the pair of fixing pieces 52 has a shape in which the distance between the pair of fixing pieces 52 is larger than that of the upper portion, that is, A pair of fixing pieces 52 are provided in such a manner that upper and lower portions of the through hole 52a formed in the pair of fixing pieces 52 are fixed tightly to the outer diameter of the supporting member 22 by a tensile force.

The operation of the present invention will now be described.

As shown in Figs. 4 to 5,

First, in moving the pedestal 1 upward,

A pair of fixing pieces 52 spreading downward from the upper side are held in parallel with the action of the user to press the pair of fixing pieces 52 to contract the elastic member 53, The upper and lower portions of the through hole 52a of the fixing piece 52 which are tightly fixed to the outer peripheral surface of the support member 22 are released.

In this state, when the user moves the pedestal 1 upward,

The rod member 40 and the stopper 51 are horizontally moved to the right along the outer circumferential surface of the support member 22 and the support portion 20 and the pair of leg portions 10 are inserted into the guide holes 11, One end of the first support 31 and the second support 32 installed in the guide hole 11 and 21 move from one end to the other end of the guide hole 31. That is, The upper and lower supports 30 of the pedestal 1 are narrowed and the pedestal 1 is moved vertically upward. The height of the pedestal 1 is adjusted to the height of the user by the above-mentioned operation.

In this state,

When the pair of fixing pieces 52, which the user was pressing, are released,

The elastic member 53 contracted between the pair of fixing pieces 52 is restored,

The upper and lower portions of the through hole 52a formed in the pair of fixing pieces 52 are tightly fixed to the support member 22 to stop the stopper 51 connected to the rod member 40, The second support base 32 connected to the second support base 32 is fixed, so that the support base 20 can be held in a fixed state.

On the other hand, in moving the pedestal 1 downward,

A pair of fixing pieces 52 spreading downward from the upper side are held in parallel with the action of the user to press the pair of fixing pieces 52 to contract the elastic member 53, The upper and lower portions of the through hole 52a of the fixing piece 52 which are tightly fixed to the outer peripheral surface of the support member 22 are released.

In this state, when the user moves the pedestal 1 downward,

The rod member 40 and the stopper 51 are horizontally moved to the left along the outer circumferential surface of the support member 22 and the support portion 20 and the pair of leg portions 10 are inserted into the guide holes 11, One end of the first support 31 and the second support 32 installed in the guide hole 11 and 21 move from one end to the other end of the guide hole 31. That is, The upper and the lower portions of the support bar 30 are widened and the support bar is moved vertically downward. The height of the support bar is adjusted according to the height of the user.

In this state,

When the pair of fixing pieces 52, which the user was pressing, are released,

The elastic member 53 contracted between the pair of fixing pieces 52 is restored,

The upper and lower portions of the through hole 52a formed in the pair of fixing pieces 52 are tightly fixed to the support member 22 to stop the stopper 51 connected to the rod member 40, The second support base 32 connected to the second support base 32 is fixed, so that the support base 20 can be held in a fixed state.

On the other hand, as shown in Fig. 6,

The temporary supporting portion 20 is lowered by the load of a plurality of objects placed on the upper portion of the pedestal 1 by connecting the tension member 60 to one end of the supporting member 22 and the other end of the second supporting frame 32 , A phenomenon in which various objects are destroyed, and a safety accident caused by falling objects can be prevented.

On the other hand, as shown in Fig. 7,

The use of the height-adjustable pedestal of the present invention is not limited, and it is advantageous that various objects such as a desk, a monitor, and the like can be set and used for height adjustment.

It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the invention as defined by the appended claims and their equivalents. It will be understood by those of ordinary skill in the art that various changes and modifications may be made without departing from the scope of the present invention.

1: pedestal
10: a pair of legs
11, 21: guide bail
20:
22: Support member
30: Support
31: first support
32: second support
40: rod member
50:
51: Stopper
52: a pair of fixing pieces
51a, 52a: through hole
53: elastic member
60: Tension member

Patent Citations (4)

Publication number	Priority date	Publication date	Assignee	Title
JPH08140746A *	1994-11-24	1996-06-04	France Bed Co Ltd	Table device
KR200191510Y1 *	2000-03-16	2000-08-16	정남규	Supporter of cabinet
KR20090028042A	2007-09-13	2009-03-18	박종윤	Height-adjustable desk with multiple function
KR20120000589U *	2010-07-15	2012-01-25	정희성	Worktable for farm produce
Family To Family Citations				

* Cited by examiner, † Cited by third party

Cited By (8)

Publication number	Priority date	Publication date	Assignee	Title
CN105901924A *	2016-06-29	2016-08-31	浙江嘉宜实业有限公司	Linkage mechanism for lift table
CN106165968A *	2016-09-07	2016-11-30	宁波澳威进出口有限公司	A kind of liftable workbench
KR20180005353A *	2016-07-06	2018-01-16	주식회사 비체클	Stand for adjusting height
KR20190120870A *	2018-04-17	2019-10-25	유지열	Notebook computer support
KR20190121266A *	2019-06-04	2019-10-25	유지열	Notebook computer support
KR102084384981 *	2019-03-19	2020-03-03	최수연	Notebook stand
KR102125664881 *	2020-02-11	2020-06-24	최수연	Notebook stand
Family To Family Citations				
US10827827B1	2019-06-10	2020-11-10	John R. Failing	Adjustable height stand and case

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
KR101707110B1	2017-02-15	Stand for adjusting height
US9403049B2	2016-08-02	Exercise device
WO2005076746A3	2005-10-27	Back traction and muscle stretching bench
JP2018520740A	2018-08-02	Height-adjustable table

KR101929234B1	2019-03-14	Stand for adjusting height
KR20120056056A	2012-06-01	An apparatus for supporting feet
KR101611388B1	2016-04-11	Inversion table
KR101706892B1	2017-02-16	Leg stretching apparatus
KR101929233B1	2018-12-17	Support with adjustable height and angle
RU166673U1	2016-12-10	MECHANICAL DEVICE FOR HOLDING THE HAND
KR20160096358A	2016-08-16	Apprutus switchable desk and chair
WO2014074014A1	2014-05-15	Spinal unloading device
WO2019040457A1	2019-02-28	Foot swing
US9638939B2	2017-05-02	Covered sliding operator
KR101721147B1	2017-03-30	Table adjustable its height
RU126934U1	2013-04-20	DEVICE FOR UNLOADING A SPINE
KR20110042547A	2011-04-27	A foot pillow
KR20120136991A	2012-12-20	Athletic apparatus
KR20170135258A	2017-12-08	Multi-leg strap device
JP3195015U	2014-12-25	Multifunctional health equipment
AU2018100618A4	2018-06-14	The present invention relates to a device that facilitates activation of a person's leg and trunk muscles. More specifically, the present invention relates to a therapeutic device that facilitates the correct sequence of muscle activation required for a safe transition between sitting and standing for a person with limited mobility.
KR100964277B1	2010-06-16	Surrort leg device for experimenting and exercising stand
KR20160088657A	2016-07-26	exercising apparatus for sphincteral muscles
KR20130137286A	2013-12-17	Chair including waist supporter capable of adjusting height
KR20130078895A	2013-07-10	Universal chair

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
KR1020140183275A	2014-12-18	2014-12-18	Stand for adjusting height

Applications Claiming Priority (1)

Application	Filing date	Title
KR1020140183275A	2014-12-18	Stand for adjusting height

Legal Events

Date	Code	Title	Description
2014-12-18	A201	Request for examination	
2016-07-29	E902	Notification of reason for refusal	
2017-01-19	E701	Decision to grant or registration of patent right	
2017-02-09	GRNT	Written decision to grant	
2020-02-04	FPAY	Annual fee payment	Payment date: 20200204 Year of fee payment: 4

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
corresponding		claims,abstract,description	4	0.000
Hip		abstract,description	2	0.000
Scoliosis		abstract,description	2	0.000
effects		abstract	1	0.000

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(54) 발명의 명칭 **높이 조절이 가능한 받침대**

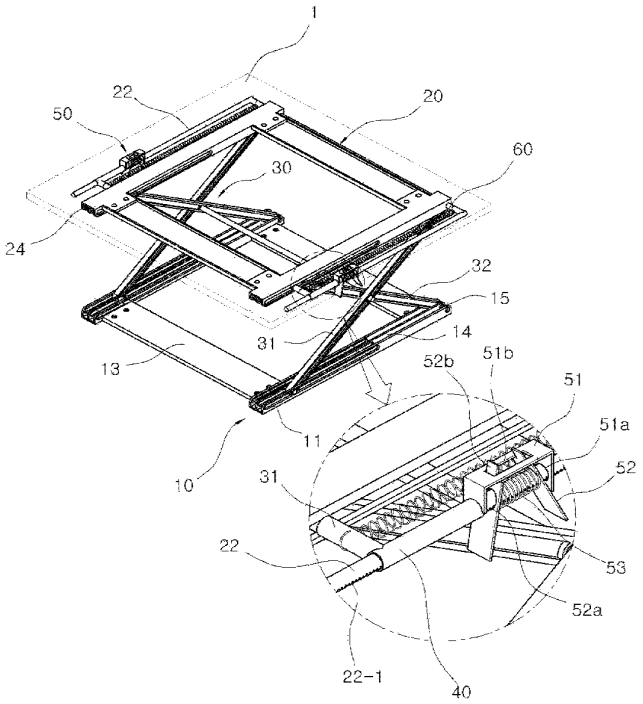
(57) 요 약

본 발명은 높이 조절이 가능한 받침대에 관한 것으로서,

일측 길이방향으로 가이드 공이 형성된 한 쌍의 다리부와, 상기 한 쌍의 다리부 가이드 공과 상호 대응하는 위치에 가이드 공이 형성되고, 양측면으로 지지부재가 형성된 받침부와, 상기 일단은 한 쌍의 다리부 가이드 공에 연

(뒷면에 계속)

대 표 도 - 도1



결설치되고, 타단은 받침부에 고정되는 제1지지대와, 상기 제1지지대와 X자 형태로 구비되되, 일단은 한 쌍의 다리부에 연결설치되고, 타단은 받침부의 가이드 공에 연결설치되는 제2지지대와, 상기 제1지지대와 제2지지대를 연결하는 연결축을 더 포함하는 지지대와, 상기 제2지지대의 일단에 연결설치되어, 받침부의 지지부재를 감싸 구비되어 슬라이딩 가능하게 설치되는 로드부재와, 상기 로드부재 일측으로 구비되되, 지지대의 작용에 따라 높이를 조절한 후, 로드부재를 고정 및 해제하기 위해 마련된 고정부 구성되는 것을 특징으로 한다.

상술한 바와 같이 본 발명은 사용자가 손으로 간단히 가압하여 받침대의 높이를 조절할 수 있는 구조를 제공함으로써, 책상, 모니터, 노트북 등 각각의 물품의 높이를 조절하여 사용함은 물론, 회사원이나 학생 등, 사용하는 사람의 신장에 따라 정밀하게 조절하여 사용할 수 있어, 회사업무 및 공부를 보다 효율적으로 할 수 있는 동시에, 허리의 긴장완화하여 척추 측만증을 예방할 수 있는 효과가 있다.

명 세 서

청구범위

청구항 1

일측 길이방향으로 가이드 공(11)이 형성된 한 쌍의 다리부(10)와,

상기 한 쌍의 다리부(10) 가이드 공(11)과 상호 대응하는 위치에 가이드 공(21)이 형성되고, 양측면으로 지지부재(22)가 형성된 받침부(20)와,

상기 일단은 한 쌍의 다리부(10) 가이드 공(11)에 연결설치되고, 타단은 받침부(20)에 고정되는 제1지지대(31)와, 상기 제1지지대(31)와 X자 형태로 구비되되, 일단은 한 쌍의 다리부(10)에 연결설치되고, 타단은 받침부(20)의 가이드 공(21)에 연결설치되는 제2지지대(32)와, 상기 제1지지대(31)와 제2지지대(32)를 연결하는 연결축(33)을 더 포함하는 지지대(30)와,

상기 제2지지대(32)의 일단에 연결설치되어, 받침부(20)의 지지부재(22)를 감싸 구비되어 슬라이딩 가능하게 설치되는 로드부재(40)와,

상기 로드부재(40) 일측으로 구비되되, 지지대(30)의 작용에 따라 높이를 조절한 후, 로드부재(40)를 고정 및 해제하기 위해 마련된 고정부(50) 구성되는 것을 특징으로 하는 높이 조절이 가능한 받침대.

청구항 2

제 1항에 있어서,

상기 고정부(50)는 로드부재(40)에 일측으로 형성되며, 지지부재(22)가 관통될 수 있게 일면에 관통공(51a)이 형성되고, 상면에 공간부(51b)가 형성된 스토퍼(51)와, 상기 스토퍼(51) 내측으로 구비되되, 지지부재(22)가 관통될 수 있게 관통공(52a)이 형성되고, 상부는 스토퍼(51)의 공간부(51b)에 위치하는 밀착부(52b)를 포함하는 한 쌍의 고정편(52)과, 상기 한 쌍의 고정편(52) 사이에 위치하되, 지지부재(22)를 감싸 설치되는 탄성부재(53)로 구성되는 것을 특징으로 하는 높이 조절이 가능한 받침대.

청구항 3

제 2항에 있어서,

상기 지지부재(22)의 외주면에는 고정편(52)이 고정되기 위해 톱니부(22-1)가 형성되는 것을 특징으로 하는 높이 조절이 가능한 받침대.

청구항 4

제 1항에 있어서,

상기 지지부재(22) 일단과, 제2지지대(32) 타단에 연결설치되는 텐션부재(60)를 더 포함하는 것을 특징으로 하는 높이 조절이 가능한 받침대.

발명의 설명

기 술 분 야

[0001] 본 발명은 높이 조절이 가능한 받침대에 관한 것으로서, 좀더 상세하게 설명하면, 사용자가 받침대를 간단히 조절하여 책상 데스크, 모니터, 노트북 등에 받침대로 사용함으로써, 회사원이나 학생 등, 사용하는 사람의 신장에 따라 정밀하게 조절하여 사용할 수 있어, 회사업무 및 공부를 보다 효율적으로 할 수 있는 동시에, 각종 업무를 처리하는데 있어서, 입석 또는 착석하여 업무를 처리함으로써, 허리의 긴장을 완화하여, 허리건강에도 큰 도움을 줄 수 있는 높이 조절이 가능한 받침대에 관한 것이다.

배 경 기 술

[0002] 일반적으로 책상은 일상 생활에서 업무용이나 학습용 또는 작업용 등으로 널리 사용되고 있다. 특히 업무용이나 작업용의 경우 사용자의 요구에 맞추어 다양한 형태 및 기능을 가진다.

[0003] 보통 책상은 사용자의 체형을 고려하지 않고 고정된 높이로 제공되었기 때문에 신장이 작거나 큰 사람의 경우에는 사용의 불편함이 있었으며, 컴퓨터를 사용하거나 기타 사무 작업 시에도 고정된 책상 높이로 인한 불편함을 초래하는 문제점이 있었다.

[0004] 상기와 같이 고정된 높이를 갖는 책상을 사용할 경우, 의자를 사용하여 알맞는 높이로 조절하여 사용해야 하는데, 키가 큰 사용자들의 경우에는 다리의 길이 때문에 앉은 자세가 불편할 뿐만 아니라 키가 작은 사용자의 경우 다리가 지면에 닿지 않는 경우가 발생하게 되어 의자에 착석한 상태로 상판을 이용한 학습 등으로 인한 장시간 생활할 때에는 성장기에 있는 학생들에게 척추를 비롯한 신체 발달에 상당한 무리가 발생하게 되는 문제점이 있다.

[0005] 그러나, 최근에 출시되고 있는 책상은 서로 다른 체형을 가진 사용자가 자신의 체형에 맞추어 상판의 높낮이를 조절할 수있도록 하는 상판 높낮이 조절장치가 부착되어 사용자가 상판의 높이를 의자의 높이와 맞추어 적절하게 조정하여 사용할수 있도록 하고 있다.

[0006] 선행기술로, 공개특허 10-2009-0028042 " 높이조절이 가능한 다기능 책상"이 소개되었다.

[0007] 상기 책상의 구조를 간단히 설명하면,

[0008] 지지다리의 고정바 안으로 삽입설치되는 다수개의 고정홈이 형성된 승강바가 수직상하 이동가능하게 구비되며, 상기 승강바의 고정홈 내까지 진입하여, 승강바로 높이조절 후, 승강바와 고정바를 고정시키는 고정핀이 구비되어, 상판의 높이를 사용자에 신장에 맞게 조절한 다음, 고정핀을 사용하여 승강바와 고정바를 고정하는 구조를 갖는다.

[0009] 그러나, 상기와 같은 구조를 갖는 책상은 상판의 높이를 조절하는데 있어서, 매번 고정핀을 삽입 또는 해제해야 하기 때문에 번거로운 문제점이 있는 동시에, 승강바에 일정간격으로 배열된 고정홈에 고정핀을 삽입하여 고정해야하기 때문에, 고정홈 사이사이 부분의 높이를 조절할 수 없기 때문에는 정밀하게 높이를 조절하는데 있어서 한계가 있었다.

선행기술문헌

특허문헌

[0010] (특허문헌 0001) 공개특허 10-2009-0028042 " 높이조절이 가능한 다기능 책상"

발명의 내용

해결하려는 과제

[0011] 상기 종래의 문제점을 해결하기 위한 본 발명의 목적은 보다 용이하게 사용자가 높이를 자유롭게 조절할 수 있는 동시에, 사용자의 신장에 알맞게 정밀히 높이를 조절함으로써, 회사원일 경우에, 편안한 자세로 보다 효과적으로 업무를 처리할 수 있는 이점을 제공하고, 성장속도가 빠르게 진행되는 학생인 경우에, 신체조건에 알맞게 높이를 조절하여, 학생들의 척추가 휘어지는 척추 측만증이 발생하거나 성장속다 둔화하는 것을 예방할 수 있는 높이 조절이 가능한 받침대를 제공하는 것이다.

과제의 해결 수단

[0012] 상기와 같은 목적을 달성하기 위한 본 발명은

[0013] 일측 길이방향으로 가이드 공이 형성된 한 쌍의 다리부와, 상기 한 쌍의 다리부 가이드 공과 상호 대응하는 위치에 가이드 공이 형성되고, 양측면으로 지지부재가 형성된 받침부와, 상기 일단은 한 쌍의 다리부 가이드 공에 연결설치되고, 타단은 받침부에 고정되는 제1지지대와, 상기 제1지지대와 X자 형태로 구비되되, 일단은 한 쌍의 다리부에 연결설치되고, 타단은 받침부의 가이드 공에 연결설치되는 제2지지대와, 상기 제1지지대와 제2지지대를 연결하는 연결축을 더 포함하는 지지대와, 상기 제2지지대의 일단에 연결설치되어, 받침부의 지지부재를 감싸 구비되어 슬라이딩 가능하게 설치되는 로드부재와, 상기 로드부재 일측으로 구비되되, 지지대의 작용에 따라

높이를 조절한 후, 로드부재를 고정 및 해제하기 위해 마련된 고정부 구성되는 것을 특징으로 한다.

[0014] 또한, 상기 고정부는 제2지지대의 타단에 연결설치되되, 받침부의 지지부재를 감싸 구비되는 로드부재와, 상기 로드부재에 연결형성되며, 지지부재가 관통될 수 있게 일면에 관통공이 형성되고, 상면에 공간부가 형성된 스토퍼와, 상기 스토퍼 내측으로 구비되되, 지지부재가 관통될 수 있게 관통공이 형성되고, 상부는 스토퍼의 공간부에 위치하는 밀착부를 포함하는 한 쌍의 고정편과, 상기 한 쌍의 고정편 사이에 위치하되, 지지부재를 감싸 설치되는 탄성부재로 구성되는 것을 특징으로 한다.

[0015] 또한, 상기 지지부재의 외주면에는 고정편이 고정되기 위해 톱니부가 형성되는 것을 특징으로 한다.

[0016] 또한, 상기 지지부재 일단과, 제2지지대 타단에 연결설치되는 텐션부재를 더 포함하는 것을 특징으로 한다.

발명의 효과

[0017] 상술한 바와 같이 본 발명은 사용자가 손으로 간단히 가압하여 받침대의 높이를 조절할 수 있는 구조를 제공함으로써, 책상, 모니터, 노트북 등 각각의 물품의 높이를 조절하여 사용함은 물론, 회사원이나 학생 등, 사용하는 사람의 신장에 따라 정밀하게 조절하여 사용할 수 있어, 회사업무 및 공부를 보다 효율적으로 할 수 있는 동시에, 허리의 긴장완화하여 척추 측만증을 예방할 수 있는 효과가 있다.

도면의 간단한 설명

[0018] 도 1은 본 발명에 따른 높이 조절이 가능한 받침대를 나타낸 사시도.

도 2는 본 발명에 따른 고정부를 발취한 발취도.

도 3은 본 발명에 따른 받침대의 높이조절과정을 나타낸 측면도.

도 4는 본 발명에 따른 받침대의 높이조절 후, 고정부에 의해 고정되는 과정 1을 나타낸 과정도.

도 5는 본 발명에 따른 받침대의 높이조절 후, 고정부에 의해 고정되는 과정 2를 나타낸 과정도.

도 6은 본 발명에 따른 텐션부재가 작용을 나타낸 측면도.

도 7은 본 발명에 따른 모니터나 노트북 받침대로 사용되는 사용도.

발명을 실시하기 위한 구체적인 내용

[0019] 이하, 첨부된 도면을 참조하여 본 발명의 바람직한 실시 예를 설명하면 다음과 같다.

[0020] 본 발명은 일측 길이방향으로 가이드 공(11)이 형성된 한 쌍의 다리부(10)와, 상기 한 쌍의 다리부(10) 가이드 공(11)과 상호 대응하는 위치에 가이드 공(21)이 형성되고, 양측면으로 지지부재(22)가 형성된 받침부(20)와, 상기 일단은 한 쌍의 다리부(10) 가이드 공(11)에 연결설치되고, 타단은 받침부(20)에 고정되는 제1지지대(31)와, 상기 제1지지대(31)와 X자 형태로 구비되되, 일단은 한 쌍의 다리부(10)에 연결설치되고, 타단은 받침부(20)의 가이드 공(21)에 연결설치되는 제2지지대(32)와, 상기 제1지지대(31)와 제2지지대(32)를 연결하는 연결축(33)을 더 포함하는 지지대(30)와, 상기 제2지지대(32)의 일단에 연결설치되어, 받침부(20)의 지지부재(22)를 감싸 구비되어 슬라이딩 가능하게 설치되는 로드부재(40)와, 상기 로드부재(40) 일측으로 구비되되, 지지대(30)의 작용에 따라 높이를 조절한 후, 로드부재(40)를 고정 및 해제하기 위해 마련된 고정부(50)로 구성된다.

[0021] 그럼, 상기와 같이 구성된 본 발명의 구성요소 및 작용에 대해 자세히 설명하면 다음과 같다.

[0022] 도 1 내지 도 3에서 도시한 바와 같이,

[0023] 본 발명은 크게, 한 쌍의 다리부(10), 받침부(20), 지지대(30), 로드부재(40), 고정부(50)로 구성된다.

[0024] 상기 한 쌍의 다리부(10)는 격벽(14)을 기준으로 양측으로 각각 공간부가 형성되고, 양측면 및 격벽(14)의 일단부로부터 길이방향으로 장공형태로 가이드 공(11)이 형성되고, 양측면 및 격벽(14)의 타단부에는 제2지지대(32)가 회동가능하게 축설되기 위해 회동공(15)이 형성되어 있다.

[0025] 상기 받침부(20)는 한 쌍의 다리부(10) 상부에 위치하며, 양측으로 한 쌍의 다리부(10)에 형성된 양측면에 형성된 가이드 공(11) 및 격벽(14)과 상호 대응하게 공간부와 가이드 공(21) 및 격벽(24)이 형성되어 있으며, 양측면으로 봉형태를 갖는 지지부재(22)가 연결형성되어 있다.