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(54) Benævnelse: **Sammenfoldelig, mekanisk drevet bordstativ**

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WO-A1-2012/099552
CN-U- 203 182 305
JP-A- 2002 345 564
JP-U- S5 745 335
US-A1- 2009 272 299

DESCRIPTION

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

[0001] The present invention is related to a collapsible power-driven table stand.

DESCRIPTION OF RELATED ART

[0002] Ergonomic designs are known to be the design trend based on the concept associated with human bodies and shapes such that the design is able to provide the most optimal solution according to different shape and sizes of the user; therefore, mass produced products can also be incorporated into various types of adjustment structures therein for its use in order to satisfy the needs of different users. Among these products, the lifting mechanism of table is also one of the realizations for the application of the ergonomic design, which is able to adjust the height of the table in order to suit to the needs of different body heights and to achieve most optimal comforts. Therefore, the table with lifting function with adjustments has become one of the main trends in the modern designs.

[0003] In the currently existing power-driven tables lifting mechanisms, a portion of these tables use pneumatic cylinders for the stands and utilize the control on the lifting of the pneumatic cylinders to achieve the adjustments on the position of the heights. Although these tables have the characteristic of simplified assembly in their structures, due to the lifting of the pneumatic cylinders at high speed in the operation as well as the requirement of the manual actions of lowering the pneumatic cylinders by the user during the lowering thereof, improper forces exerted by the user can often lead to extremely large differences in the heights of the table, which cannot satisfy the needs of the user and often requires numerous attempts on the adjustments of lifting and lowering until a suitable height of the table can be obtained; in other words, the effectiveness of these tables are poor.

[0004] Another portion of power-driven tables use power-driven cylinders for the stands. Although such solution can effectively overcome the difficulties in the aforementioned adjustments on the positions of the heights of the tables, it has the drawbacks of a complicated structure, tedious and time-consuming assembly, heavy weight, large size and so on, that need to be overcome.

[0005] CN 203 182 305 U relates to a foldable lifting desk which comprises a desktop, a beam supported under the desktop, a lifting mechanism and a driving mechanism driving the lifting mechanism to lift. The lifting mechanism comprises at least one pair of lifting upright columns which are arranged opposite to each other. Each lifting upright column comprises an inner tube, an outer tube and a sliding device driving the inner tube and the outer tube to slide in a relative mode, wherein the inner tube is in sliding fit with the outer tube. The lifting upright columns are respectively connected at an end of the beam through a connecting device. One end of each connecting device is fixedly connected with one lifting upright column, and the other end of each connecting device is in rotating connection with the beam. The lifting upright columns of the foldable lifting desk can be folded with the beam, so that the foldable lifting desk is simple in installation and convenient to pack and convey.

[0006] Further documents which disclose relevant prior art are the following: JP 2002/345564 A; US 2009/272299 A1; WO 2012/099552 A1 and JP S57 45335 U.

SUMMARY OF THE INVENTION

[0007] An objective of the present invention is to provide a collapsible power-driven table stand capable of simplifying the assembly procedure of the user and having a compact structure for reducing the overall size of thereof.

[0008] To achieve the aforementioned objective, the present invention provides a collapsible power-driven table stand, as claimed by claim 1, comprising a supporting body, a first stand and a second stand. The supporting body is of an elongated shape. The first stand comprises a first driving member and a plurality of first extendable rod driven by the first driving member to move axially relative to each other. The first driving member is pivotally attached to one end of the supporting body in order to allow the first stand to extend or collapse relative to the supporting body. The second stand comprises a second driving member

and a plurality of second extendable rod driven by the second driving member to axially move relative to each other. The second driving member is pivotally attached to another end of the supporting body in order to allow the second stand to extend or collapse relative to the supporting body, wherein each wherein each of the first driving member and second driving member comprises a housing being received in the receiving slot and having a protuding plattform which includes a first screw hole; the housing being fastened by fastening units penetrating through inner side holes of the rectangular columns and further fastening onto the first screw hole such that the each of the first stand and second stand is able to use it as a rotational center. The collapsible power-driven table stand further comprises a controller electrically connected to the first driving member and the second driving member in order to control a synchronous actuation of the first driving member and the second driving member; wherein the controller is concealed inside the receiving slot.

[0009] The present invention further includes the following merits. With the characteristic of having each one of the stands configured to be bendable and extendable, the overall size of the structure after collapsing can be significantly reduced in order to save the use of packaging materials and to lower the transportation costs. By utilizing the characteristic of common structural members for the assembly, the use of the material can be reduced in addition to that the costs of the component and storage management can be further reduced as well. As the driving members and the controllers are concealed inside the receiving slots of the supporting body and the head portions of the screws are also concealed inside the rectangular columns, the beauty of the overall outer appearance can be achieved with appealing effects.

BRIEF DESCRIPTION OF DRAWING

[0010]

FIG. 1
is a perspective outer view of the power-driven table stand the present invention;
FIG. 2
is an exploded perspective view of the supporting body and the first stand of the present invention;
FIG. 3
is a cross sectional view of the supporting body and the first stand of the present invention;
FIG. 4
is an illustration showing the supporting body and the stands of the present invention during the collapsing thereof for storage;
FIG. 5
is an illustration showing the supporting body and the stands of the present invention after the completion of the collapsing thereof for storage;
FIG. 6
is an illustration showing a state of use of the stands of the present invention;
FIG. 7
is an exploded view of parts of the components of another embodiment of the present invention; and
FIG. 8
is an illustration showing the assembly of another embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0011] The following provides detailed description of embodiments of the present invention along with the accompanied drawings. It can, however, be understood that the accompanied drawings are provided for illustrative purposes only and shall not be treated as limitations to the present invention.

[0012] Please refer to FIG. 1 to FIG. 4. The present invention provides a collapsible power-driven table stand mainly comprising a supporting body 10, a first stand 20 and a second stand 30.

[0013] The supporting body 10 is of an elongated shape and mainly comprises a lateral bracket 11 and two side wings 12. The lateral bracket 11 includes two rectangular columns 111 spaced apart from each other and connected in parallel; a receiving slot 112 is formed between the two rectangular columns 111; two end surfaces of each rectangular column 111 include a rectangular insertion hole 113 formed thereon respectively. In addition, each side plate of the rectangular column 111 includes an inner side

hole 114 and an outer side hole 115. Furthermore, a bottom plate of the rectangular column 111 includes a plurality of perforations 116.

[0014] The side wing 12 is generally of a T shape and comprises a fixation plate 121 and two U-shaped members 122 secured onto a mid-section area of the fixation plate 121. The fixation plate 121 is provided for a table top 8 to be fastened thereon. Each U-shaped member 112 is inserted into the aforementioned insertion hole 113 correspondingly; in addition, a lateral side of the U-shaped member 122 includes a through hole 123 corresponding to the aforementioned outer side hole 115, and a bottom surface of the U-shaped member 122 includes a plurality of screw holes 124 corresponding to the aforementioned perforations 116 in order to allow fastening units such as screws to fasten thereon.

[0015] The first stand 20 is generally of an L shape and comprises a first driving member 21 and a plurality of extendable rods 22 connected to the first driving member 21. The first driving member 21 mainly comprises a rectangular housing 211 for accommodating components including such as a motor, a speed reduction mechanism, such as a worm shaft and worm gear set or reduction gear set, and leading screw shaft (not shown in the figures) penetrating through the housing 211 to the external thereof. The housing 211 includes a protruding platform 212 formed at an inner corner position thereof. The center position of the protruding platform 212 includes a first screw hole 213; the housing 211 is received inside the aforementioned receiving slot 112 and is fastened by fastening units 23, such as screws, penetrating through the inner side hole 114 and further fastened onto the first screw hole 213 such that the first stand 20 is able to use it as a rotational center to perform rotations and swings for extension or collapsing relative to the supporting body 10. In addition, the housing 211 includes a second screw hole 214 at a top of the first extendable rod 22; when the first stand 20 is rotated to extend relative to the supporting body 10 and perpendicular to the lateral bracket 11, it can be fastened by fastening units 23, such as screws, penetrating through the outer side hole 115 and further fastened onto the second screw hole 214.

[0016] In this embodiment, the structure is constructed by three first extendable rods 22 to form a three-staged extendable structure, which can also be a two-staged or four-staged extendable structure. Each first extendable rod 22 is driven by the aforementioned motor and the leading screw shaft to be able to move axially relative to each other in order to achieve the extension or retraction thereof.

[0017] Preferably, the first stand 20 further comprises a first bottom plate 24. The first bottom plate 24 uses fastening units, such as screws, to be fastened onto the bottom surface of the outer most first extendable rod 22.

[0018] The second stand 30 comprises a second driving member 31 and a plurality of second extendable rods 32 driven by the second driving member 31 to move axially relative to each other. The second driving member 31 is pivotally attached to the supporting body 10 in order to allow the second stand 30 to extend or collapse relative to the supporting body 10. Since the second driving member 31 and the second extendable rods 32 have structures identical to those of the first driving member 21 and the first extendable rods 22 in addition to that the second bottom plate 34 is of an identical structure as that of the first bottom plate 24, similar details thereof are omitted hereafter.

[0019] Preferably, the collapsible power-driven table stand of the present invention further comprises a controller 40. The controller 40 is also received inside the receiving slot 112 and is electrically connected to the first driving member 21 and the second driving member 31. With the utilization of the controller 40, a synchronous actuation of the first driving member 21 and the second driving member 31 can be achieved.

[0020] Please refer to FIG. 5 and FIG. 6. With the combination of the aforementioned assembly, during the collapsing for storage of the present invention, the pivotal rotational area of the second stand 30 is used as a rotation center for rotating the end portions of the second extendable rods 32 into the receiving slot 112, followed by using the pivotal rotational area of the first stand 20 as a rotation center for rotating the first extendable rods 22 therein and to use its end portions to abut against the second extendable rods 32; therefore, the action of the collapsing for storage can be completed swiftly with ease. On the contrary, when the user wishes to use the present invention, the first extendable rods 22 and the second extendable rods 32 are rotated out in sequence, and the U-shape member 122 of each side wing 12 is inserted into the insertion hole 113 of the rectangular column 111 correspondingly, as shown in FIG. 2, followed by using the fastening units 23 to sequentially penetrate through the outer side hole 115 and the through hole 123 in order to be further fastened onto the second screw hole 214. Accordingly, with such configuration, the costs associated with the formation of the screw holes can be reduce and the head portions of the fastening units 23 are allowed to be concealed inside the rectangular columns 111 such that the beauty of the overall outer appearance can be achieved.

[0021] Furthermore, as the controller 40 is electrically connected to the first driving member 21 and the second driving member

31, it is able to simultaneously drive the first extendable rods 22 and the second extendable rods 32 to perform synchronous actions of retraction and extension, as shown in FIG. 6.

[0022] Please refer to FIG. 7 and FIG. 8. In addition to the aforementioned embodiment of the collapsible power-driven table stand of the present invention, according to another embodiment of the present invention, it can further comprises a longitudinal bracket 50 and a third stand 60; wherein the supporting body further comprises a supporting structure 14. The supporting structure 14 can include two pairs of hollow columns 141, and each hollow column 141 is soldered to the outer surfaces of two rectangular columns 111 in a direction perpendicular to the rectangular columns 111. One end of the longitudinal bracket 50 penetrates through one of the pairs of the hollow columns 141. The third stand 60 comprises a third driving member 61 and a plurality of extendable rods 62 driven by the third driving member 61 to move axially relative to each other. The third driving member 61 is pivotally attached to one end of the longitudinal bracket 50 away from the hollow column 141. The aforementioned controller 40 is electrically connected to the third driving member 61 in order to achieve the synchronous actuation with the first driving member 21 and the second driving member 31.

[0023] In addition, the structure of the longitudinal bracket 50 is identical to that of the aforementioned lateral bracket 11, and the third stand 60 is also of a structure identical to that of the first stand 20 or the second stand 30; likewise, the third bottom plate 64 has a structural identical to that of the first bottom plate 24 or the second bottom plate 34. With such configuration, the characteristic of the common components among these assembly structures yields a great reduction on the cost.

[0024] In summary there is disclosed a collapsible power-driven table stand includes a supporting body 10 of an elongated shape, a first stand 20 having a first driving member 21 and a plurality of first extendable rods 22 driven by the first driving member 21 to move axially relative to each other and a second stand 30 having a second driving member 31 and a plurality of second extendable rods 32 driven by the second driving member 31 to move axially relative to each other. The first diving member 21 is pivotally attached to one end of the supporting body 10 and the second diving member31 is also pivotally attached to another end of the supporting body 10 in order to allow both the first and second stands 20, 30 to extend/collapse relative to the supporting body 10. Accordingly, the assembly of the collapsible power-driven table is simplified and the overall size thereof is reduced.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN203182305U **[0005]**
- JP2002345564A **[0006]**
- US2009272299A1 **[0006]**
- WO2012099552A1 **[0006]**
- JPS5745335U **[0006]**

Krav

1. Sammenfoldelig, mekanisk drevet bordstativ, som omfatter:

en bærekonstruktion (10), der har en langstrakt form og inkluderer en sidekonsol (11) med to parallelforbundne rektangulære kolonner (111), som er anbragt i afstand fra hinanden, hvorved der dannes en optagerspalte (112) mellem de rektangulære kolonner (111);

en første stander (20), der omfatter et første drivelement (21) og et første antal udtrækkelige stænger (22), som af det første drivelement (21) kan drives til at bevæge sig aksialt i forhold til hinanden, hvor det første drivelement (21) er anbragt i optagerspalten (112) og er fastgjort til de to rektangulære kolonner (111) således, at det første drivelement (21) svingbart er fastgjort til den ene ende af bærekonstruktionen (10) for at tillade den første stander (20) at blive forlænget eller trukket sammen i forhold til bærekonstruktionen (10); og

en anden stander (30), der omfatter et anden drivelement (31) og et anden antal udtrækkelige stænger (32), som af det anden drivelement (31) kan drives til at bevæge sig aksialt i forhold til hinanden, hvor det anden drivelement (31) er anbragt i optagerspalten (112) og er fastgjort til de to rektangulære kolonner (111) således, at det første drivelement (31) svingbart er fastgjort til den ene ende af bærekonstruktionen (10) for at tillade den anden stander (30) at blive forlænget eller trukket sammen i forhold til bærekonstruktionen (10); hvori det første drivelement (21) og det anden drivelement (31)

hver omfatter et hus (211), som er optaget i optagerspalten (112) og har en udragende platform (212), der inkluderer et første skruehul (213), hvor huset (211) er fastgjort med fastgørelsesenheder (23), som er skudt ind gennem indre sidehuller (114) i de rektangulære kolonner (111), og som yderligere er fastgjort i det første skruehul (213), således at den første stander (20) og den anden stander (30) hver er i stand til at anvende dette som omdrejningscenter;

det sammenfoldelige, mekanisk drevne bordstativ omfatter yderligere en styreenhed (40), der elektrisk er forbundet med det første drivelement (21) og det anden drivelement (31) for at styre en synkron aktivering af det første drivelement (21) og det anden drivelement (31), hvorved styreenheden (40) er skjult inden i optagerspaltens (112).

2. Sammenfoldelig, mekanisk drevet bordstativ ifølge krav 1, hvori bærekonstruktionen (10) yderligere omfatter en sidefløj (12), der har en fastgørelsesplade (121) og et U-formet element (122), som er fastgjort på fastgørelsespladen (121), hvorved en endeflade på den rektangulære kolonne (111) inkluderer en på denne udformet indsætningsåbning (113); det U-formede element (122) er indsat i indsætningsåbningen (113).

3. Sammenfoldelig, mekanisk drevet bordstativ ifølge krav 2, hvori sidefløjen (12) har en T-form.

4. Sammenfoldelig, mekanisk drevet bordstativ ifølge krav 1, og som yderligere omfatter en langsgående kolonne (50) og en tredje stander (60), hvorved to af den langsgående

kolonnes (50) ender er forbundet med henholdsvis bærekonstruktionen (10) og den tredje stander (60).

5. Sammenfoldelig, mekanisk drevet bordstativ ifølge krav 4, hvori den tredje stander (60) omfatter et tredje drivelement (61) og et tredje antal udtrækkelige stænger (62), som af det tredje drivelement (61) kan drives til at bevæge sig aksialt i forhold til hinanden, det tredje drivelement (61) er svingbart fastgjort til den langsgående kolonne (50), og styreenheden (40) er elektrisk forbundet med det tredje drivelement (61).

6. Sammenfoldelig, mekanisk drevet bordstativ ifølge krav 4, hvori bærekonstruktionen (10) omfatter en bærende struktur (14), der har et par hule kolonner (141), idet hver af de hule kolonner (141) er vinkelret forbundet med den rektangulære kolonne (111), den ene af den langsgående kolonnes (50) ender er fastgjort i de to hule kolonner(141).

7. Sammenfoldelig, mekanisk drevet bordstativ ifølge ethvert af de foregående krav, hvori den første stander (20) er L-formet.

8. Sammenfoldelig, mekanisk drevet bordstativ ifølge ethvert af de foregående krav, hvori den første stander (20) omfatter en første bundplade (24), som i afstand fra det første drivelement (21) er forbundet med den ene ende af de første udtrækkelige stænger (22).

DRAWINGS

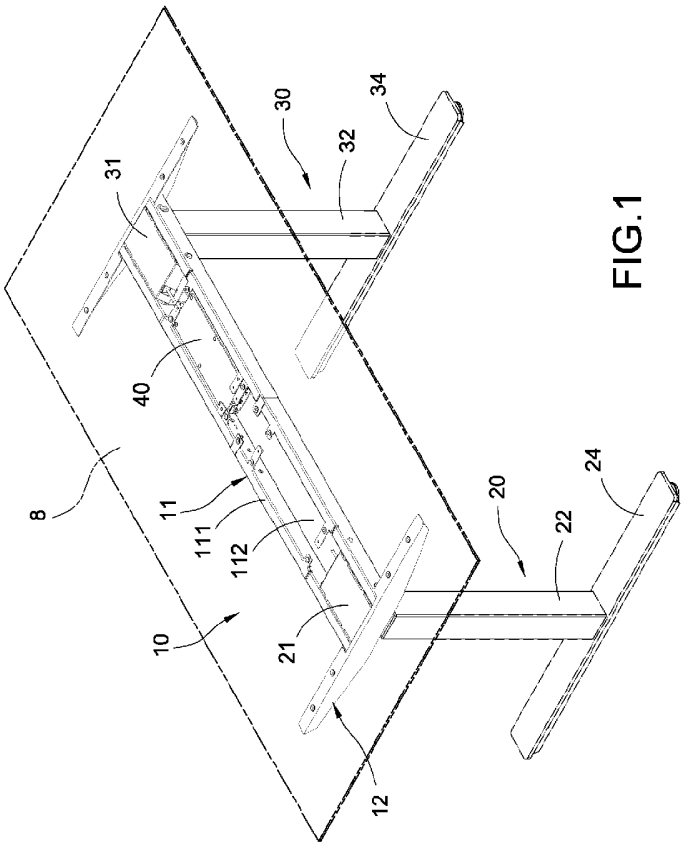

FIG.1

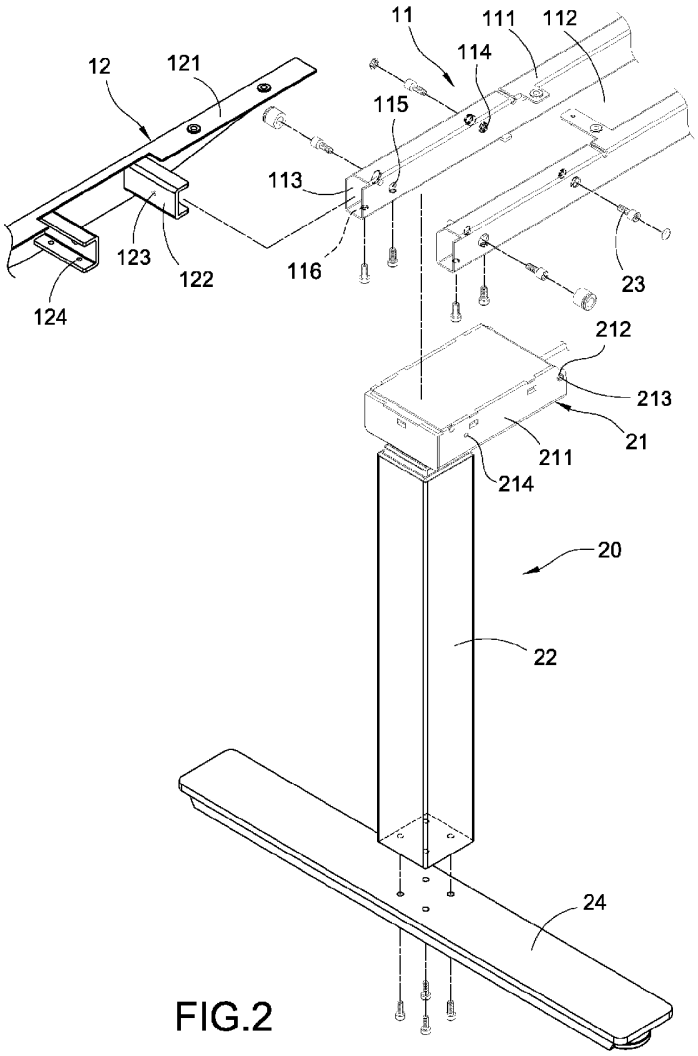
11
111
112
114
12
121
115
113
123
122
116
23
124
212
213
21
211
214
20
22
24

FIG.2

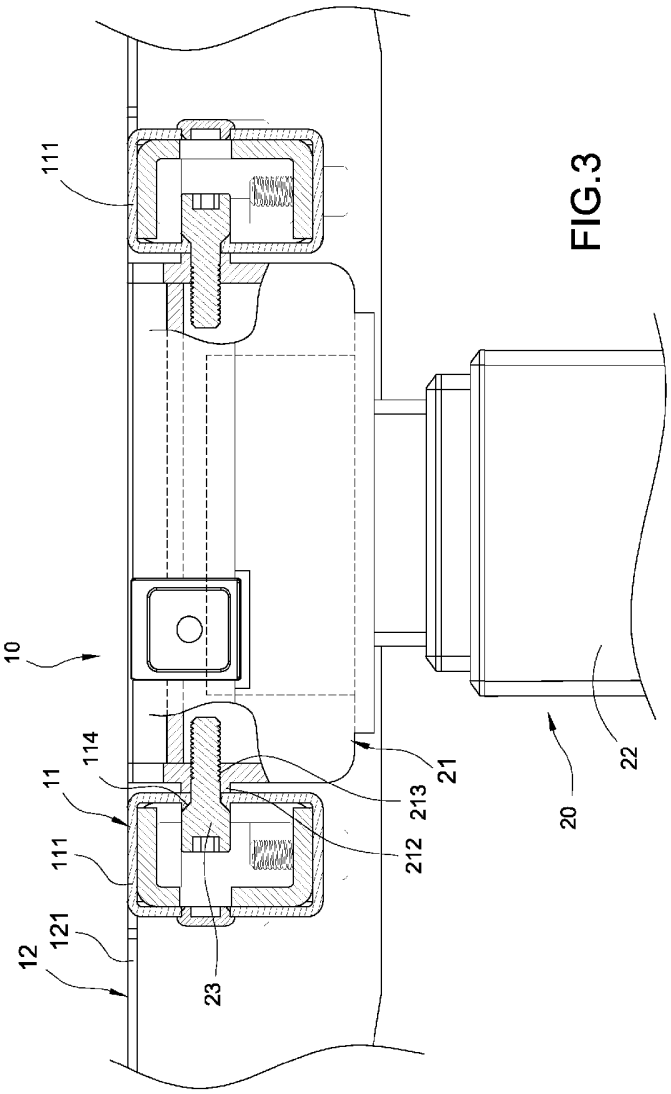

FIG.3

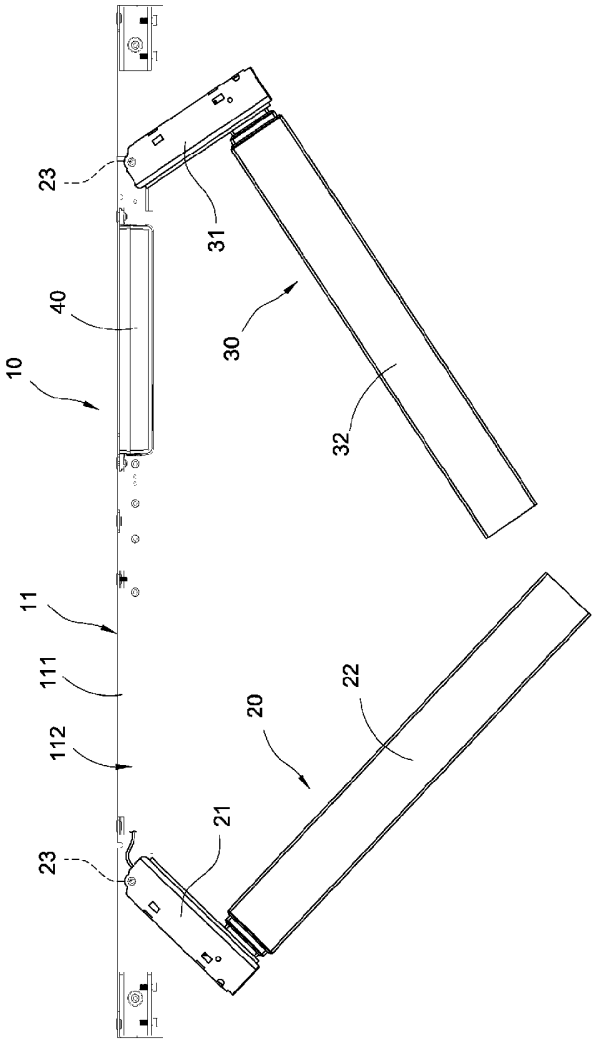

FIG.4

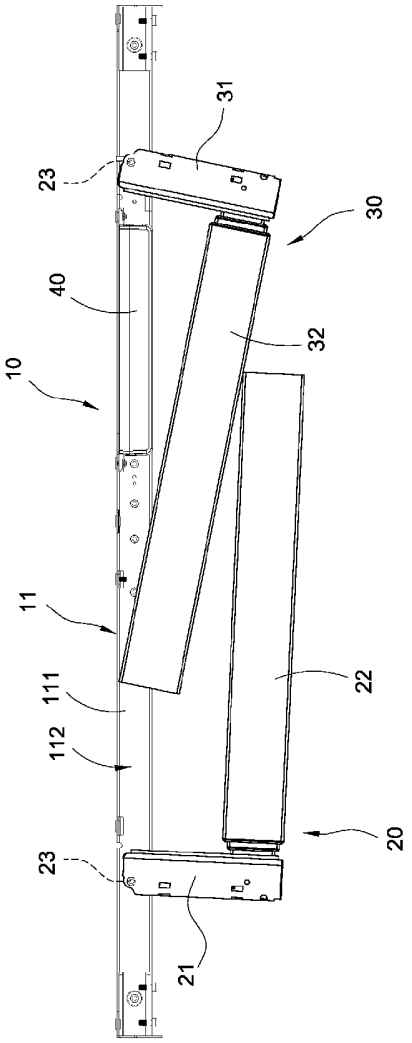

FIG.5

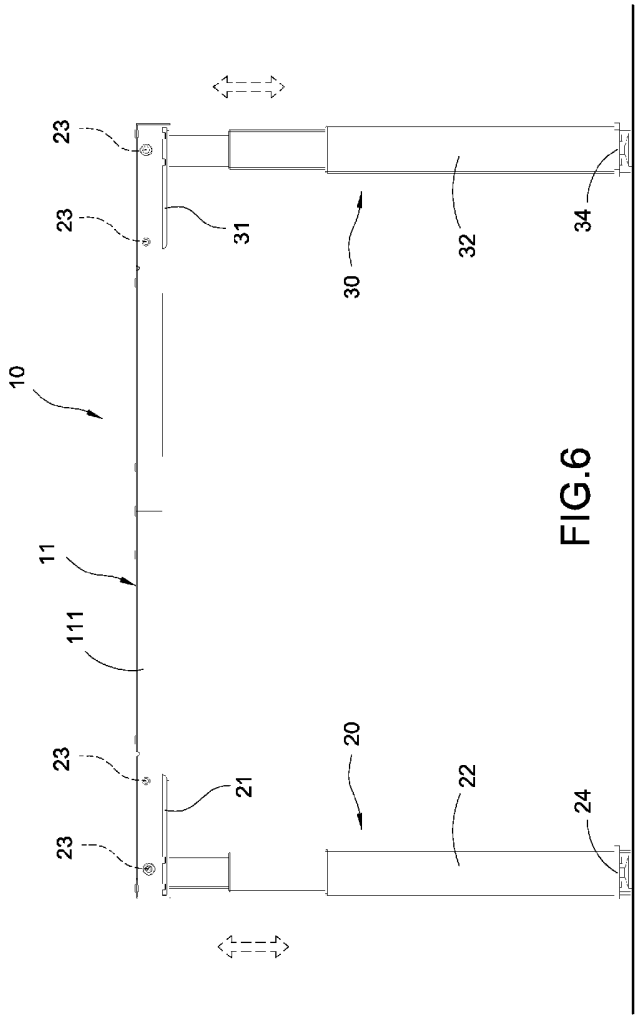

FIG.6

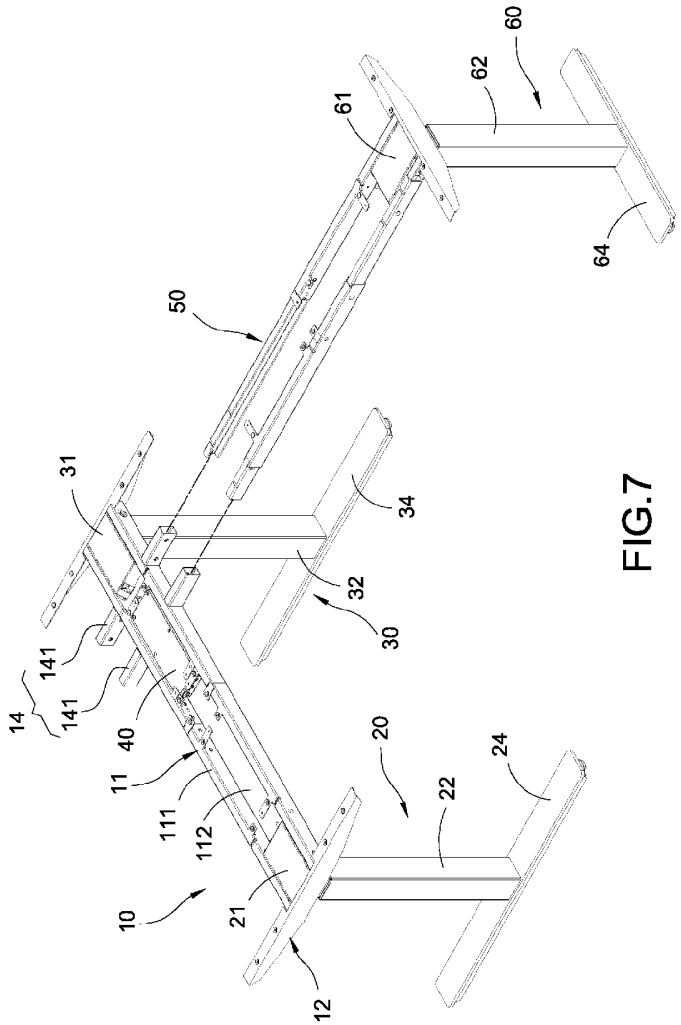

FIG.7

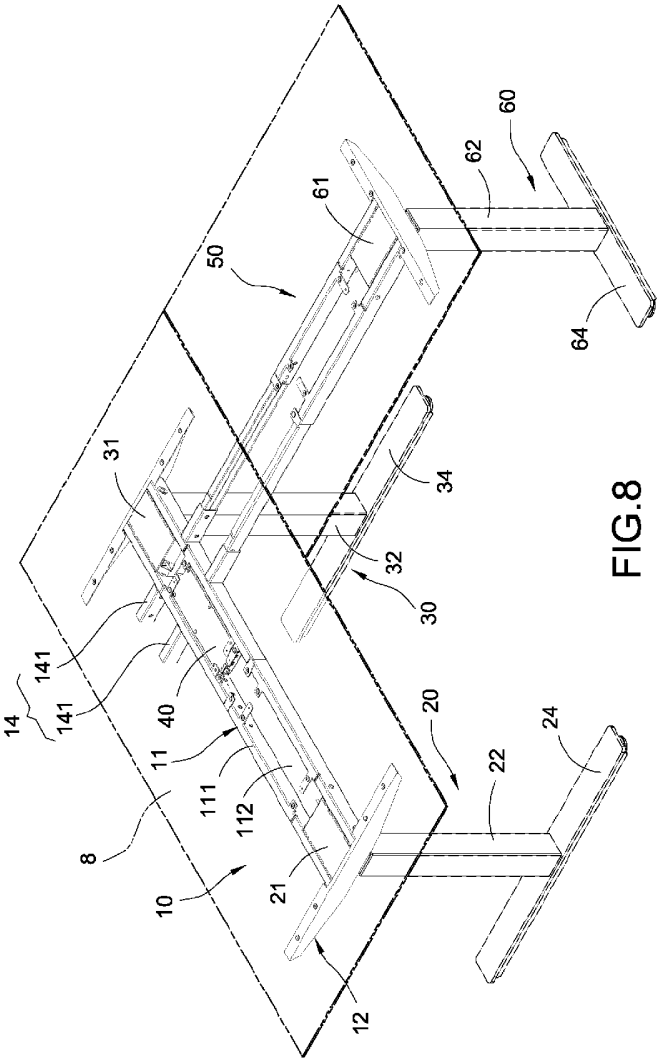

FIG.8