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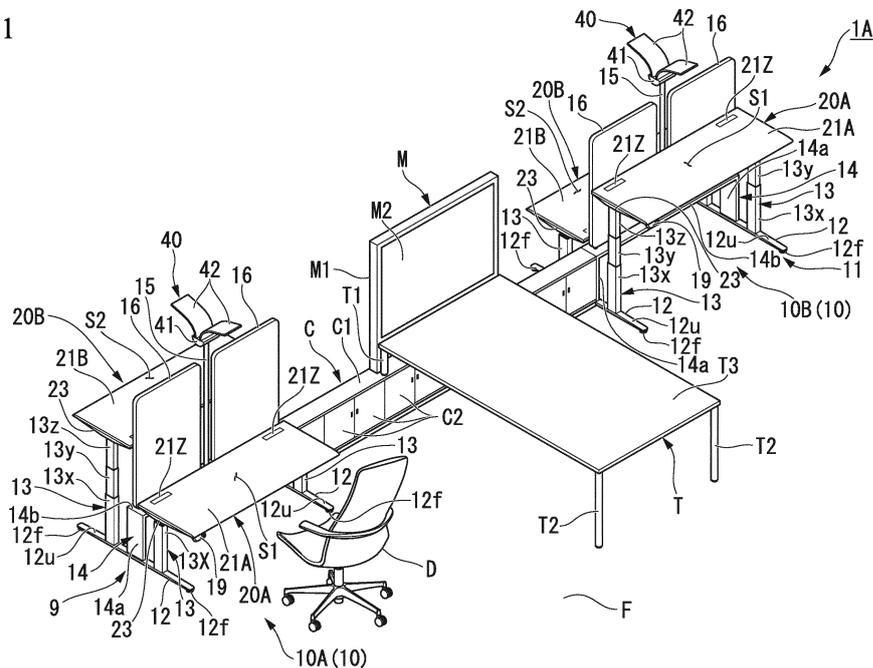
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(54) **FURNITURE HAVING HEIGHT-ADJUSTABLE TOP PANELS**

(57) A furniture having a height-adjustable top panel (10A) includes: a top panel portion (20A, 20B); a support structure (13) which is provided at the top panel portion (20A, 20B), and which supports so that the top panel portion (20A, 20B) is capable of adjusting a height by expanding or contracting the support structure in a ver-

tical direction; a joint structure (9) which is joined to the support structure (13); and an illumination apparatus (40) which is supported by the joint structure (9), and which is arranged in a vicinity of the top panel portion (20A, 20B) in a plane view.

FIG. 1



Description

Technical Field

[0001] The present invention relates to a furniture such as desk apparatus, a table apparatus, a counter apparatus, equipped with a top panel configured to move up and down, i.e., the furniture having a height-adjustable top panel.

[0002] Priority is claimed on Japanese Patent Application No. 2015-093646, filed on April 30, 2015, the content of which is incorporated herein by reference.

Background Art

[0003] In a work space of an office, a public facility, or the like, it is common that desk apparatuses (desks) are arranged so as to provide a work area for workers. The ideal height for the top panel of a desk which allows workers to comfortably work varies greatly depending on the gender, physique, or preference of a worker. In such circumstances, a height-adjustable top panel desk has been used, that is capable of adjusting the height of the top panel in a vertical direction. These height-adjustable top panel desks can provide, the work area having an appropriate height of the top panel in accordance with the preference of the workers. As a result, work efficiency may be improved and stress on the body of the workers may be reduced.

[0004] Different configurations have been proposed for changing the height of the top panel in a vertical direction, using, i.e., a gas spring, or a gear (see, for example, the Patent Document 1 and Patent Document 2 listed below). Cost can be reduced because such configurations are comparatively simple. In order to enhance usability for the operator, a configuration using an electric adjusting mechanism unit is often adopted (for example, see the below Patent Document 3, Patent Document 4, and Patent Document 5). According to this method, the worker can adjust the height of the top panel with a simple operation.

[0005] Furthermore, another document suggests a height-adjustable table which includes: a plurality of top panels; and a leg that supports each plurality of top panels in a manner in which the height of the top panels is adjustable. In this kind of the height-adjustable table, the plurality of top panels are supported by one common leg, while the heights of the top panels are separately adjustable (for example, see the below

Patent Document 6).

Citation List

Patent Literatures

[0006]

[Patent Document 1] Japanese Patent No. 3371959
[Patent Document 2] Japanese Patent No. 3391285
[Patent Document 3] Utility Model Registration No. 3164739

[Patent Document 4] Japanese Unexamined Patent Application, First Publication No. 2014-113505

[Patent Document 5] Japanese Unexamined Patent Application, First Publication No. 2014-140753

[Patent Document 6] Japanese Unexamined Patent Application, First Publication No. 2014-217740

Summary of Invention

Problem to be Solved by the Invention

[0007] However, the desk apparatus or the like having a height adjustable top panel has a structural problem in which, when the apparatus has structural features (such as a panel) installed around the top panel, light from an illumination apparatus provided on a ceiling and the like may be obstructed by the structural features. As a result, there is a problem in that light does not fully reach the top panel and illuminance becomes lower.

[0008] For example, in a table having a height-adjustable top panel that moves vertically of Patent Document 6, when a height of a first top panel is higher than a second top panel and the first and second panels were arranged so as to face each other, light from the illumination apparatus provided on the ceiling is obstructed by the first top panel. Therefore, light may not fully reach in the second top panel side, and there is a problem in that illuminance becomes lower.

[0009] Furthermore, if the illumination apparatus is provided and supported by a support from the floor surface, when the top panel moves up and down, the support and the illumination apparatus interfere with the top panel and there is a possibility in that the illumination apparatus may fall down.

[0010] The present invention was conceived in view of the above-described situation and has an object to provide furniture having a height-adjustable top panel in that an illumination apparatus can be stably supported and illuminance on the top panel portion can be ensured.

Solution to Problem

[0011]

(1) According to one aspect of the present invention, furniture having a height-adjustable top panel includes: a top panel portion; a support structure which is provided at the top panel portion, and which supports the top panel portion so as to be capable of moving the top panel portion vertically by expanding or contracting the support structure in a vertical direction; a joint structure which is joined to the support structure; and an illumination apparatus which is supported by the joint structure, and which is ar-

ranged in a vicinity of the top panel portion in a plane view.

According to this configuration, the illumination apparatus is supported by the joint structure that is joined to the support structure supporting the top panel portion so as to be capable of moving the top panel portion vertically by expanding or contracting the support structure in a vertical direction. Therefore, the illumination apparatus can be stably supported regardless of a vertical movement of the top panel portion because the illumination apparatus is supported by a member that is different from the support structure supporting the top panel portion.

Furthermore, the illumination apparatus can illuminate the top panel from a vicinity because the illumination apparatus is supported by the joint structure and is arranged in a vicinity of the top panel portion in a plane view. Consequently, illuminance on the top panel portion can be ensured.

(2) In the furniture having a height-adjustable top pane described above in item (1), the illumination apparatus may be arranged above the joint structure. According to this configuration, because the illumination apparatus may be arranged above the joint structure, the top panel portion can be illuminated from above and illuminance on the top panel portion can be ensured.

(3) In the furniture having a height-adjustable top pane described above in item (1) or (2), the top panel portion may be composed in a pair and the pair of top panel portions may be arranged to face each other. The support structures may be respectively provided in the pair of top panel portions. Each of the support structures may support so that corresponding top panel portion is capable of moving up and down by expanding and contracting the support structures in the vertical direction. The joint structure may be attached between the support structures that support the pair of top panel portions and the illumination apparatus may be supported by the joint structure and may be arranged between the pair of top panel portions.

According to this configuration, the illumination apparatus is supported by the joint structure that is attached between the support structures each of which supports corresponding top panel portion in a vertically adjustable manner by expanding or contracting the support structure in the vertical direction. Therefore, because the illumination apparatus is supported by a member that is different from the support structures supporting the top panel portions, the illumination apparatus can be stably supported regardless of a vertical movement of the top panel portions.

Furthermore, because the illumination apparatus is arranged between the pair of top panel portions, both the pair of top panel portions can be illuminated. Therefore, illuminance on the top panel portions can

be ensured.

(4) In the furniture having a height-adjustable top pane described above in item (3), the joint structure may have a pair of base portions which are separated away from each other in a intersecting direction that intersects a facing direction in which the pair of top panel portions faces, the pair of base portions being provided on a floor and a joint portion which is provided between the pair of base portions, and which supports the illumination apparatus.

According to this configuration, because the joint portion is provided throughout an intersecting direction in the top panel portion, the illumination apparatus can be supported throughout the intersecting direction. Therefore, brightness throughout an intersecting direction of the top panel can be ensured.

(5) In the furniture having a height-adjustable top pane described above in item (4), the joint structure may have a support that supports the illumination apparatus and that extends upward from the joint portion.

According to the above-mentioned configuration, because the support that extends upward from the joint portion supports the illumination apparatus, the illumination apparatus is provided at a higher place. Consequently, the upper surfaces of the top panel portions can be illuminated from the above.

Furthermore, the top panel portions, the support structure, the pair of base members, the joint portion, the support and the illumination apparatus can be unitized.

(6) In the furniture having a height-adjustable top pane described above in any one of items (1) to (3), the joint structure may have an intermediate partition panel that is arranged between the pair of top panel portions.

According to the above-mentioned configuration, a space of one top panel side and a space of the other top panel side can be partitioned by the intermediate partition panel that is arranged between the pair of top panel portions. Therefore, personal space can be provided for the user of the top panel portions. Furthermore, the top panel portions, the support structure, the joint structure, the illumination apparatus, and the intermediate partition panel can be unitized.

(7) In the furniture having a height-adjustable top pane described above in item (6), the illumination apparatus may be arranged above the intermediate partition panel.

According to the above-mentioned configuration, because illumination apparatus is arranged above the intermediate partition panel, illumination apparatus can illuminate each top panel portion from the above. Therefore, a space of one top panel side and a space of the other top panel side can be partitioned and illuminance on the top panel portions can be ensured.

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Advantageous Effects of Invention

[0012] According to the above-mentioned furniture having the height-adjustable top panel, the illumination apparatus can be stably supported and illuminance on the top panel portion can be ensured.

Brief Description of Drawings

[0013]

FIG. 1 is a perspective view of a furniture having a height-adjustable top panel according to the first embodiment of the present invention.

FIG. 2 is a perspective view of the furniture having a height-adjustable top panel according to the second embodiment of the present invention.

FIG. 3 is a perspective view of the furniture having a height-adjustable top panel according to the third embodiment of the present invention.

FIG. 4 is a perspective view of the furniture having a height-adjustable top panel according to the fourth embodiment of the present invention.

FIG. 5 is a perspective view of the furniture having a height-adjustable top panel according to the fifth embodiment of the present invention.

Description of Embodiments

[First embodiment]

[0014] Hereinafter, a desk system will be described as an example of a furniture having a height-adjustable top panel according to the present invention.

[0015] FIG. 1 is a perspective view of the furniture having a height-adjustable top panel according to the first embodiment of the present invention.

[Desk system]

[0016] As shown in FIG. 1, a desk system 1A includes desk apparatuses (10A, 10B) that are arranged apart from each other, housing box C that is arranged between the desk apparatus 10A and the desk apparatus 10B, and a monitor M and a table that are supported by the housing box C.

[Desk apparatus]

[0017] In the following description, a desk apparatus 10 will be used as a generic term that includes desk apparatuses 10A and 10B.

[0018] Each desk apparatus 10 includes top panel portions 20A, 20B, support leg members (support structure) 13, an intermediate structure (joint structure) 9, and an illumination apparatus 40. Each support leg member 13 supports the top panels 20A, 20B. The intermediate structure 9 is attached between the support leg member

13 that supports the top panel portion 20A and the support leg member 13 that supports the top panel portion 20B. The illumination apparatus 40 is attached to the intermediate structure 9.

[0019] The top panel portion 20A includes the top panel 21A which is rectangular in plan view and the top panel portion 20B includes the top panel 21B which is rectangular in plan view. The top panel 21A and the top panel 21B face each other in each short-side direction in a plane view.

[0020] Here, in the following descriptions, a direction (short-side direction) in which the top panels 21A, 21B face each other is referred to as a facing direction accordingly. A direction along a longitudinal direction of the top panels 21A, 21B is referred to as a width direction (intersecting direction). A direction perpendicular to a floor surface F on which the desk apparatus 10 is established is referred to as a vertical direction (upper and lower direction).

[0021] Each of the top panels 21A, 21B has a support bracket 23 that extends in the facing direction in a lower surface of both end portions of the width direction of the top panels 21A, 21B. The top panels 21A, 21B are joined to an upper end of a third cylindrical portion 13z (detailed later) of the support leg members 13, 13 that are positioned at the end portions of the width direction of top panels 21A, 21B via these support bracket 23, 23.

[0022] A wiring insertion hole (not shown) vertically penetrated to each top panel 21A, 21B is provided at the both end portions of the width direction of top panels 21A, 21B. A wiring cap 21Z is fitted in the wiring insertion hole

[0023] The intermediate structure 9 includes base members (base portion) 12 that are provided along the floor surface F, a joint beam (joint portion) 14 that connects base members 12 to each other, and a support 15 and an intermediate partition panel 16 that are attached to the joint beam 14.

[0024] Each of base members 12 is arranged at an interval along the width direction and is provided so as to position at the end portions of the width direction of the desk apparatus 10. A grounding member 12f that grounds to the floor surface F is provided at the end portions of the facing direction of a lower surface of each base member 12. A projection dimension downward from the base member 12 is adjustable. Therefore, the desk apparatus 10 is configured so that a height and a horizontal level of the base member 12 are adjustable.

[0025] The joint beam 14 is formed in a gate type. The joint beam 14 includes joint legs 14a that rise from an upper surface 12u of each base member 12, and a horizontal member 14b that joints to the joint legs 14a each other.

[0026] The support 15 is attached to the horizontal member 14b of the joint beam 14 by a screw (not shown) or the like. The support 15 is arranged slightly spaced from an end portion of the facing direction of the top panel portion 20A and the top panel portion 20B and extends the vertical direction.

[0027] The intermediate partition panel 16 is fixed to an upper portion of the horizontal member 14b of the joint beam 14 via an attachment bracket (not shown) or the like.

The intermediate partition panel 16 is arranged between the top panel 21A and the top panel 21B, and is positioned in a vertical surface. The intermediate partition panels 16, 16 are spaced from each other along the width direction of the top panel 21A (21B). The support 15 is arranged between the intermediate partition panels 16.

[0028] This intermediate partition panel 16 may be formed by an acrylic resin, transparent material having light-transmitting, light shielding material stretching cloth on a surface, or the like.

[0029] Each support leg member 13 supports the top panel portion 20A and the top panel portion 20B that extend in the vertical direction and that are provided on each base member 12. That is, the top panel portion 20A is supported by a pair of support leg members 13 that are arranged spaced from each other in the width direction of the top panel portion 20A. Similarly, the top panel portion 20B is supported by the pair of support leg members 13 that are arranged spaced from each other in the width direction of the top panel portion 20B.

[0030] Each support leg member 13 is provided at each base member 12 spaced from each other in a longitudinal direction (the facing direction of the top panel 21A and the top panel 21B). Each support leg member 13 includes a first cylindrical portion 13x that is fixed to the upper surface 12u of the base member 12, a second cylindrical portion 13y that is capable of being inserted into the first cylindrical portion 13x in the vertical direction, and a third cylindrical portion 13z that is capable of being inserted into the second cylindrical portion 13y in the vertical direction. The first cylindrical portion 13x, the second cylindrical portion 13y, and the third cylindrical portion 13z are rectangular cylindrical shape. The second cylindrical portion 13y and the third cylindrical portion 13z are projected along the vertical direction with respect to the first cylindrical portion 13x, thereby each support leg member 13 is configured to be adjustable in the vertical direction.

[0031] Furthermore, the desk apparatus 10 includes a control unit (not shown; hereinafter the same shall apply) that controls a movement of the support leg member 13, and a manipulation portion 19 that inputs a height-movement signal to the control unit.

[0032] The control unit is fixed to, for example, the lower surface or the like of the top panels 21A, 21B. The power supply cable (not shown; hereinafter the same shall apply) that is connected to commercial power supply provided at the working space in which the desk apparatus 10 is arranged is connected to this control unit.

[0033] The manipulation portion 19 is provided at the lower surface of the top panels 21A, 21B. The manipulation portion 19 is electrically connected to the control unit via a wiring cable (not shown; hereinafter the same shall apply). When a user inputs a predetermined manipulation for the manipulation portion 19, a manipulation

signal is transmitted to the control unit via the wiring cable from the manipulation portion 19. When the control unit receives the manipulation signal from the manipulation portion 19, the control unit outputs a command signal that causes the support leg member 13 to perform a height-movement operation based on a received signal. When each support leg member 13 receives the command signal, for example, each support leg member 13 drives an extension-contraction by an extension-contraction apparatus (not shown) incorporated in each support leg member 13 according to the command signal, thereby the height of the top panel portions 20A, 20B is adjusted.

[0034] The illumination apparatus 40 is arranged in a vicinity of the top panel portions 20A, 20B in a plane view. Specifically, the illumination apparatus 40 is supported by the support 15 arranged slightly spaced from the end portion of the facing direction of the top panels 21A, 21B. The illumination apparatus 40 includes an emitting part 41 in which a light bulb, a light emitting diode (LED), or the like (not shown) is provided, and cover portions 42 that covers the emitting part 41. Each cover portions 42 extends in the facing direction of the top panel portions 20A, 20B from the emitting part 41. The illumination apparatus 40 is arranged above the intermediate partition panel 16.

[0035] A housing box C is provided between the joint beam 14 of the desk apparatuses 10A and the joint beam 14 of the desk apparatuses 10B. The housing box C include a housing body C1 in which a housing space is formed and a plurality of door portions C2 (and so on) that are provided at the housing body C1.

The door portions C2 may be provided not only at one side of the housing body C1, but also the other side of housing body C1 in a depth direction (the facing direction of the top panels 21A, 21B). In this case, a partition panel (not shown) is provided inside the housing body C1 at an intermediate part of the depth direction and the housing space of the housing body C1 is divided in the depth direction.

[0036] The monitor M includes a support frame M1 that rises from an upper portion of the housing box C and a monitor body M2 that supports by the support frame M1.

[0037] A table T includes four table legs T1, T1, T2, T2 that are arranged spaced from each other in the facing direction and a width direction of the top panels 21A, 21B and a table top panel T3 that is supported by the four table legs T1, T2.

[0038] Lower portions of the table legs T1 are provided on the upper portion of the housing box C. Lower portions of the table legs T2 are arranged on the floor surface F. Lengths of the table legs T1 are shorter than Lengths of table legs T2. Therefore, the table top panel T3 is arranged in a horizontal surface. A chair D may be arranged along the top panel portions 20A, 20B accordingly.

[0039] In the above-mentioned desk system 1A, the top panel portions 20A, 20B can be set at a predetermined height by manipulating the manipulation portion 19. A space S1 of the top panel portion 20A side and a

space S2 of the top panel portion 20B side are partitioned by the intermediate partition panel 16 arranged between the top panel portions 20A, 20B.

[0040] In the desk system 1A thus configured, support leg members 13 support the top panel portions 20A, 20B so that corresponding top panel portions 20A, 20B can be move vertically by the support leg members 13 expanding and contracting. Support leg members 13 are provided at the base members 12. The base members 12 are joined by the joint beam 14. The illumination apparatus 40 is supported by the support 15 that is attached to the joint beam 14. In this manner, the illumination apparatus 40 is supported by the base members 12 via the support 15 and the joint beam 14. Therefore, because the illumination apparatus 40 is supported by a member that is different from the support leg members 13 supporting the top panel portions 20A, 20B, the illumination apparatus 40 can be stably supported regardless of the vertical movement of the top panel portions 20A, 20B.

[0041] Because the illumination apparatus 40 is arranged between the pair of top panel portions 20A, 20B and arranged in the vicinity of the top panel portions 20A, 20B in a plane view and above the intermediate partition panel 16, the illumination apparatus 40 illuminates the top panel portions 20A, 20B from a vicinity and the above. Therefore, illuminance on the top panel portions 20A, 20B can be ensured.

[0042] The illumination apparatus 40 is provided at a higher place because the support 15 that extends upward from the joint beam 14 supports the illumination apparatus 40. Consequently, the top panel portions 20A, 20B can be illuminated from the above.

[0043] The top panel portions 20A, 20B, the base members 12, support leg members 13 (and so on), the joint beam 14, the support 15, and the intermediate partition panel 16 may be constituted as a single unit.

[0044] The space S1 of the top panel portion 20A side and a space S2 of the top panel portion 20B side are partitioned by the intermediate partition panel 16 arranged between the top panel portions 20A, 20B. Therefore, personal spaces S1, S2 can be provided for each user of the top panel portions 20A, 20B.

[0045] The illumination apparatus 40 can illuminate each of top panel portions 20A, 20B from the above of the intermediate partition panel 16, because the illumination apparatus 40 is arranged above the intermediate partition panel 16. Illuminance on the top panel portions 20A, 20B can also be ensured.

[0046] When the horizontal member 14b of the joint beam 14 is high, because the user of the top panel portions 20A, 20B can enter user's legs below the horizontal member 14b, it is possible to improve the usability of the desk system 1A.

[Second embodiment]

[0047] The above-mentioned second embodiment will be described using mainly FIG. 2. FIG. 2 is a perspective

view of the furniture having a height-adjustable top panel according to the second embodiment of the present invention. Hereinafter, in other embodiments, identical symbols are used for the elements which are identical to those of the above-mentioned embodiment, and the explanations thereof are omitted.

[0048] As shown in FIG. 2, a desk apparatus 10C includes the top panel portions 20A, 20B, support leg members 13, the intermediate structure 9, and an illumination apparatus 40C that is attached to the intermediate structure 9.

[0049] The intermediate structure 9 includes the base member 12, the joint beam 14, a pair of support 15C that is provided at the joint beam 14, and an intermediate partition panel 16C that is provided between the pair of supports 15C.

[0050] The pair of supports 15C are respectively attached to the end portions of the width direction of the horizontal member 14b of the joint beam 14. The upper end portions of the pair of supports 15C are joined by an upper portion joint rod 15D.

[0051] The intermediate partition panel 16C is attached between these pair of supports 15C. The intermediate partition panel 16C is attached to the supports 15C by a screw or the like (not shown). A space portion SA that is penetrated in the facing direction of the top panel portions 20A, 20B is formed in the upper portion of the pair of supports 15C.

[0052] The illumination apparatus 40C includes an emitting part 41C that is provided at the upper portion joint rod 15D, and cover portions 42C that respectively extend in the facing direction of the top panel portions 20A, 20B from the upper portion joint rod 15D.

[0053] The cover portions 42C is configured by an acrylic resin, transparent material having light-transmitting or the like. Therefore, light beam of the emitting part 41C is capable of passing through the cover portions 42C.

[0054] In the desk apparatus 10C thus configured, brightness throughout the width direction of the top panel portions 20A, 20B can be ensured because the illumination apparatus 40C is provided throughout the width direction in the top panel portions 20A, 20B.

[Third embodiment]

[0055] The above-mentioned third embodiment will be described using mainly FIG. 3. FIG. 3 is a perspective view of the furniture having a height-adjustable top panel according to the third embodiment of the present invention.

[0056] As shown in FIG. 3, a desk apparatus 10E includes the top panel portions 20A, 20B, support leg members 13, the intermediate structure 9, and an illumination apparatus 40E that is attached to the intermediate structure 9.

[0057] The illumination apparatus 40E is supported by a support 15E that is provided at the horizontal member

14b of the joint beam 14. The illumination apparatus 40E includes an emitting part 41E, and a cover portion 42E that covers the above of the emitting part 41E.

[Fourth embodiment]

[0058] The above-mentioned third embodiment will be described using mainly FIG. 4. FIG. 4 is a perspective view of the furniture having a height-adjustable top panel according to the fourth embodiment of the present invention.

[0059] As shown in FIG. 4, a desk apparatus 10F includes the top panel portions 20A, 20B, support leg members 13, an intermediate structure 9F, and an illumination apparatus 40F that is attached to the intermediate structure 9F.

[0060] The intermediate structure 9F includes the base member 12, and a support 15F that is provided at the base member 12.

[0061] The illumination apparatus 40F is supported by the support 15F. The illumination apparatus 40F includes an emitting part 41F, and a cover portion 42F that covers the above of the emitting part 41F.

[Fifth embodiment]

[0062] The above-mentioned third embodiment will be described using mainly FIG. 5. FIG. 5 is a perspective view of the furniture having a height-adjustable top panel according to the fifth embodiment of the present invention.

As shown in FIG. 5, a desk apparatus 10G does not include the top panel 20A of the desk apparatus C according to the second embodiment, and the support leg member 13 that supports the top panel 20A.

[0063] The desk apparatus 10G includes the top panel portion 20B, a support leg member 13 that supports the top panel portion 20B, the joint structure (intermediate structure) 9, and an illumination apparatus 40C that is attached to the joint structure 9.

[0064] The joint structure 9 includes base members 12G that are provided along the floor surface F, and the joint beam 14.

[0065] A length of the base member 12G in the short-side direction (facing direction) of the top panel portion 20B is shorter than the base member 12 of the second embodiment.

[0066] In the desk apparatus 10G thus configured, the support leg member 13 that supports so as to be capable of adjusting a height of the top panel portion 20B by extending and contracting in the vertical direction are provided at the base members 12G. The base members 12G are joined by the joint beam 14. The upper end portions of the pair of supports 15C that is provided at the joint beam 14 are joined by the upper portion joint rod 15D. The illumination apparatus 40C is provided at the upper portion joint rod 15D. In this way, the illumination apparatus 40C is supported by the base members 12 via

the upper portion joint rod 15D, the pair of supports 15C, and the joint beam 14. Therefore, because the illumination apparatus 40C is supported by a member that is different from the support leg members 13 supporting the top panel portions 20A, 20B, the illumination apparatus 40C can be stably supported regardless of a vertical movement of the top panel portion 20B.

Brightness throughout the width direction of the top panel portions 20A, 20B can be ensured because the illumination apparatus 40C is provided throughout the width direction in the top panel 20B.

[0067] In addition, in the above-mentioned embodiments, the shape of each component, combinations thereof, or the like, are examples, the technical scope of the invention is not limited to the above embodiments, but various modifications may be made without departing from the scope of the invention.

[0068] For example, in the above-mentioned embodiments, an example of the desk apparatus 10 is explained as the furniture with a top panel. However, the furniture is not limited to this. For example, a counter, a table, or the like may be adopted except the desk.

[0069] In the above-mentioned embodiments, the joint portion is formed in the arch shape by the joint legs 14, 14a, and the horizontal member 14b, but this present invention is not limited to this. If the joint portion is provided between the pair of base members and supports the illumination apparatus, the joint portion may be arranged along the floor surface F. The intermediate structure may be configured by the housing box (not shown) that is attached between one support leg member supporting one top panel and the other support leg member supporting the other top panel.

35 Industrial Applicability

[0070] According to the above-mentioned furniture having a height-adjustable top panel, the illumination apparatus can be stably supported, illuminance on the top panel portions that are arranged so as to face each other can be ensured.

Reference Signs List

45 **[0071]**

1A: desk system
 9: intermediate structure (joint structure)
 10, 10A, 10B, 10C, 10D, 10E, 10F, 10G: desk apparatus (furniture having a height-adjustable top panel)
 12, 12G: base member (base portion)
 13: support leg member (support structure)
 14: joint beam (joint portion)
 15, 15C, 15E, 15F: support
 16, 16C: intermediate partition panel
 20A, 20B: top panel portion
 40, 40C, 40E, 40F: illumination apparatus

F: floor surface

Claims

1. A furniture having a height-adjustable top panel comprising:

a top panel portion;
 a support structure which is provided at the top panel portion, and which supports the top panel portion so as to be capable of moving the top panel portion vertically by expanding or contracting the support structure in a vertical direction;
 a joint structure which is joined to the support structure; and
 an illumination apparatus which is supported by the joint structure, and which is arranged in a vicinity of the top panel portion in a plane view.

2. The furniture having a height-adjustable top pane according to claim 1, wherein the illumination apparatus is arranged above the joint structure.

3. The furniture having a height-adjustable top pane according to claim 1 or claim 2, wherein:

the top panel portion is composed in a pair;
 the pair of top panel portions are arranged to face each other;
 the support structures are respectively provided in the pair of top panel portions;
 each of the support structures supports so that corresponding top panel portion is capable of moving up and down by expanding and contracting the support structures in the vertical direction;
 the joint structure is attached between the support structures that support the pair of top panel portions; and
 the illumination apparatus is supported by the joint structure and is arranged between the pair of top panel portions.

4. The furniture having a height-adjustable top pane according to claim 3, wherein the joint structure has:

a pair of base portions which are separated away from each other in a intersecting direction that intersects a facing direction in which the pair of top panel portions faces, the pair of base portions being provided on a floor; and
 a joint portion which is provided between the pair of base portions, and which supports the illumination apparatus.

5. The furniture having a height-adjustable top pane according to claim 4, wherein the joint structure has a support that supports the illumination apparatus and that extends upward from the joint portion.

6. The furniture having a height-adjustable top pane according to any one of claims 3 to 5, wherein the joint structure has an intermediate partition panel that is arranged between the pair of top panel portions.

7. The furniture having a height-adjustable top pane according to claim 6, wherein the illumination apparatus is arranged above the intermediate partition panel.

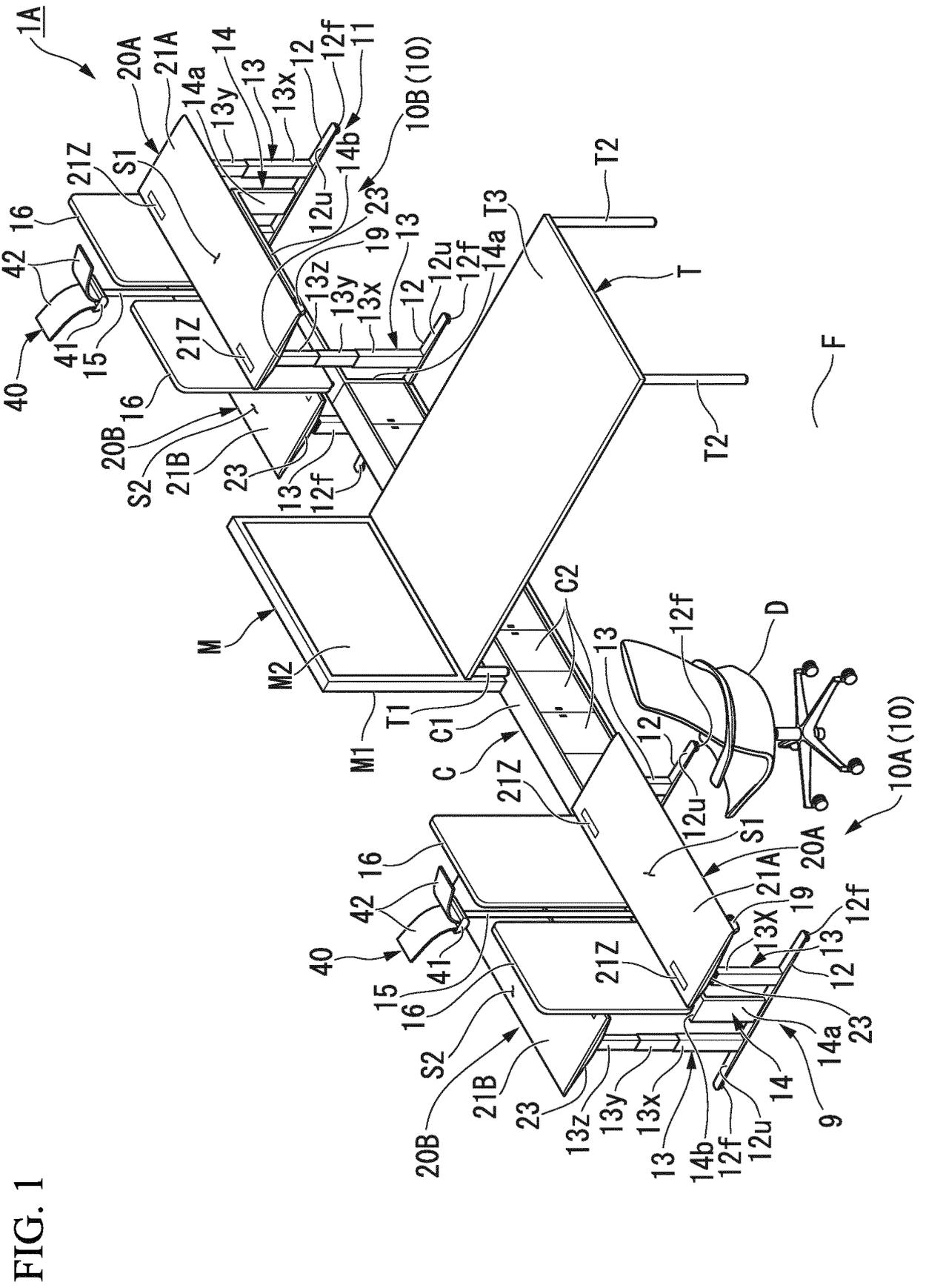


FIG. 1

FIG. 3

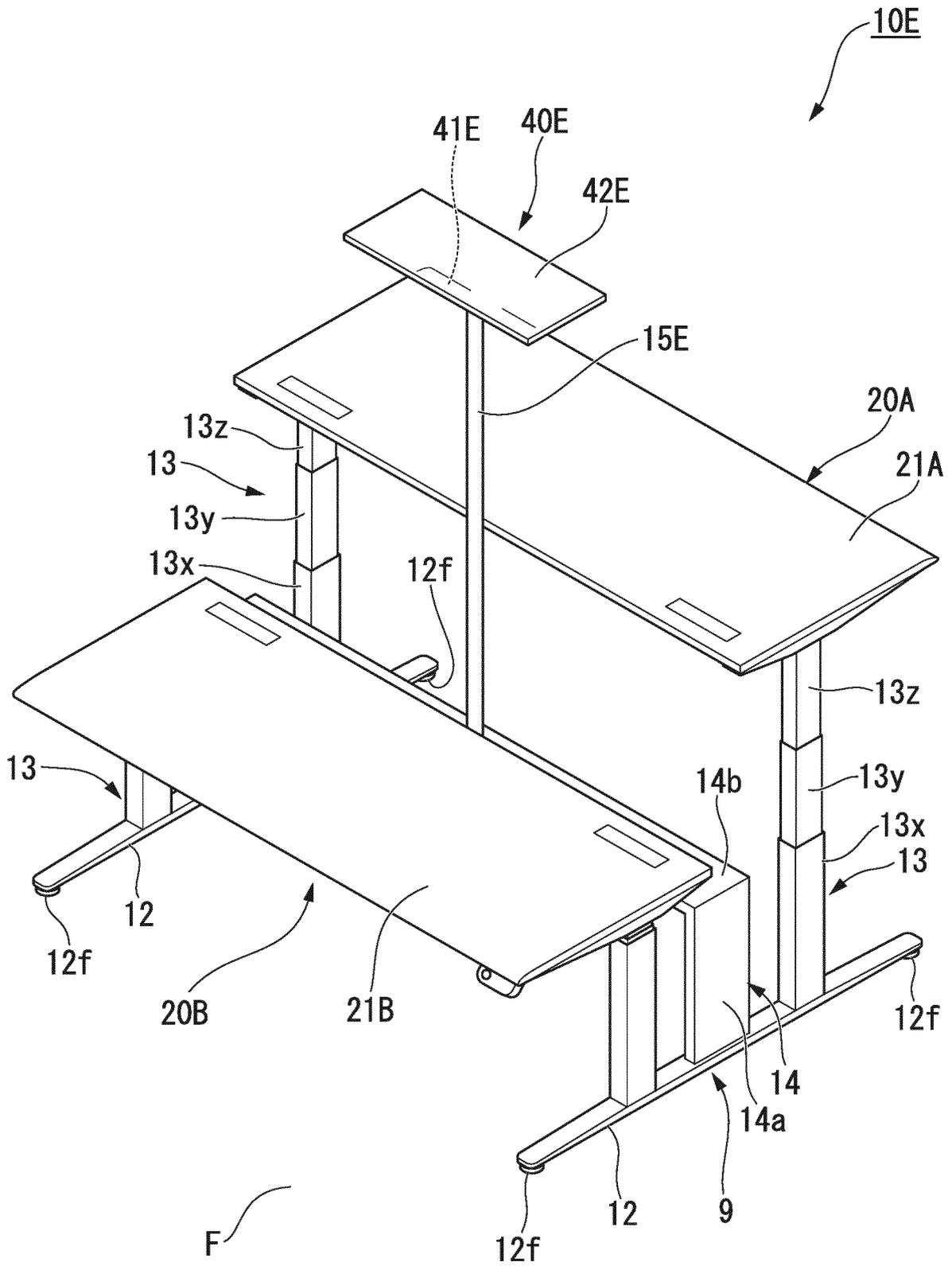
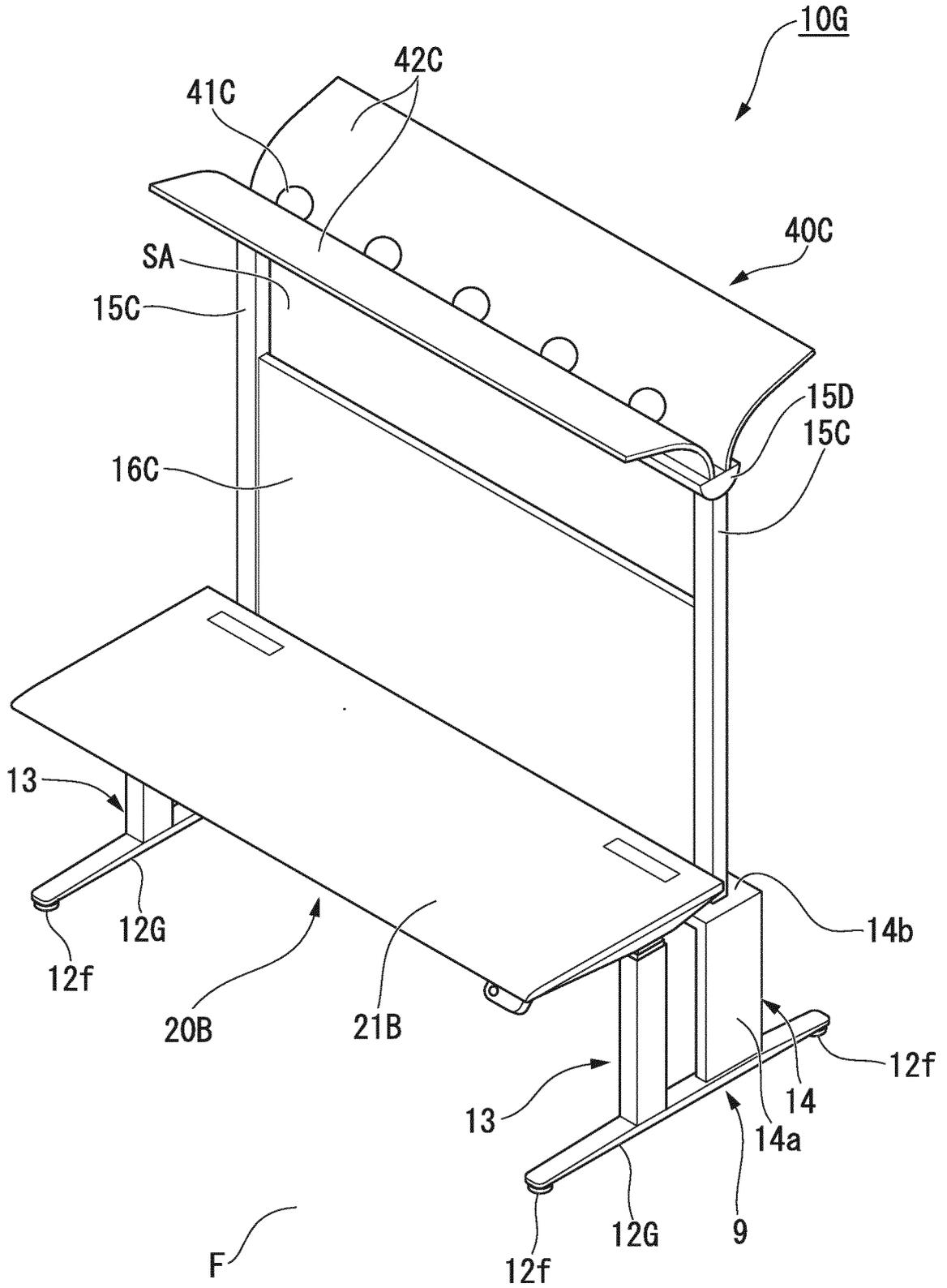


FIG. 5



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2016/063403

A. CLASSIFICATION OF SUBJECT MATTER

A47B9/00(2006.01)i, A47B7/00(2006.01)i, A47B13/00(2006.01)i, A47B17/00
(2006.01)i, A47B17/04(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)
A47B9/00, A47B7/00, A47B13/00, A47B17/00, A47B17/04

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2016
Kokai Jitsuyo Shinan Koho 1971-2016 Toroku Jitsuyo Shinan Koho 1994-2016

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	DE 202014103416 U1 (CEKA GMBH & CO. KG), 25 September 2014 (25.09.2014), paragraphs [0025] to [0037]; fig. 1, 2 & EP 2976969 A1	1, 2 3-7
Y	JP 2014-71966 A (Itoki Co., Ltd.), 21 April 2014 (21.04.2014), paragraphs [0018], [0019], [0031] to [0048], [0057], [0058]; fig. 1 to 6, 11, 12 (Family: none)	3-7

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

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Date of the actual completion of the international search
06 July 2016 (06.07.16)

Date of mailing of the international search report
26 July 2016 (26.07.16)

Name and mailing address of the ISA/
Japan Patent Office
3-4-3, Kasumigaseki, Chiyoda-ku,
Tokyo 100-8915, Japan

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INTERNATIONAL SEARCH REPORT

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2014/151755 A2 (HERMAN MILLER, INC.), 25 September 2014 (25.09.2014), paragraphs [0044], [0045]; fig. 1, 2, 4, 9, 10, 16, 17 & JP 2016-512125 A & US 2014/0312754 A1 & EP 2967212 A & CA 2905951 A & AU 2014236874 A & CN 105188476 A	3-7
Y	JP 2014-217740 A (Yugen Kaisha Technom), 20 November 2014 (20.11.2014), paragraphs [0012] to [0016]; fig. 1 to 3 (Family: none)	3-7
Y	JP 2012-161407 A (Itoki Co., Ltd.), 30 August 2012 (30.08.2012), paragraph [0037]; fig. 11 to 13 (Family: none)	6,7

REFERENCES CITED IN THE DESCRIPTION

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