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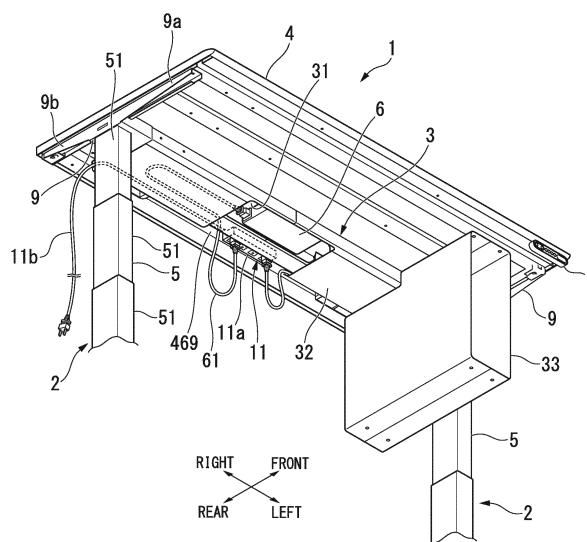
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(54) **DESK WITH VERTICALLY MOVING TOP PLATE**

(57) Provided is a desk (1) with a vertically moving top plate having a top plate (4), leg bodies (leg parts) (2) disposed on a floor surface and configured to support the top plate (4) to raise and lower such that it is able to be raised and lowered, and a raising and lowering mechanism unit (a raising and lowering mechanism) (5) con-

figured to raise and lower the top plate (4), wherein a concave section (469) opening downward is formed in the top plate (4), and the concave section (469) is formed to accommodate a socket portion (11a) of a power source tap (11).

FIG. 2



Description

[Technical Field]

[0001] The present invention relates to a desk with a vertically moving top plate capable of vertically changing a top plate height according to a demand of an office worker in a working space such as an office, a public facility, or the like.

[0002] Priority is claimed on Japanese Patent Application No. 2015-014845, filed January 28, 2015, the content of which is incorporated herein by reference.

[Background Art]

[0003] In a working space such as an office, a public facility, or the like, in general, desks are arranged to provide working areas to office workers. In such desks, top plate heights at which work is facilitated greatly differ according to body type, gender, preferences, or the like, of office workers. However, since general desks having fixed top plate heights cannot cope with the above-mentioned circumstances, in the related art, a desk with a vertically moving top plate capable of vertically changing a top plate height is provided (for example, see Patent Document 1 to Patent Document 5).

[0004] When such a desk with a vertically moving top plate is used, a working area having a top plate height according to a demand of an office worker can be provided, and a load to a body of the office worker can be reduced while improving work efficiency.

[Citation List]

[Patent Document]

[0005]

[Patent Document 1]

Japanese Patent No. 3371959

[Patent Document 2]

Japanese Patent No. 3391285

[Patent Document 3]

Japanese Registered Utility Model 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

[Summary of Invention]

[Technical Problem]

[0006] Incidentally, in the case in which a wiring of an electronic device installed on a top plate of a desk with a vertically moving top plate is connected to a power sup-

ply socket installed on a floor or a wall of a working space and exposed to a space below the top plate, when the top plate is raised and lowered, the wiring of the electronic device below the top plate is deformed or moved according to the raising and lowering of the top plate.

[0007] For this reason, when wiring of the electronic device is performed, consideration needs to be given to wiring that is deformed or moved according to the raising and lowering of the top plate not being hooked by an article such as a wagon or the like installed below the top plate. In particular, when a plurality of electronic devices are installed on the top plate, wiring of these devices takes time and labor.

[0008] On the other hand, when a socket portion of a power source tap (OA tap) is attached to a back side of the top plate and the wiring of an electronic device installed on the top plate of the desk with a vertically moving top plate is connected to the socket portion of the power source tap, since hardly any of the wiring of the electronic device is exposed in the space below the top plate, in particular, on the floor surface, the wiring of the electronic device is not deformed or moved according to raising and lowering of the top plate. However, if the socket portion of the power source tap protrudes downward from a back surface of the top plate and the top plate approaches or comes in contact with an article such as a wagon or the like installed below the top plate when the top plate is lowered, the socket portion of the power source tap may be sandwiched between the top plate and the article and damage the power source tap or the article. In addition, when the socket portion of the power source tap protrudes downward from a back side of the top plate, a user may come in contact with the socket portion of the power source tap.

[0009] Here, the present invention has an object of providing a desk with a vertically moving top plate capable of preventing a power source tap installed below a top plate from coming in contact with an article such as a wagon installed below the top plate or a user.

[Solution to Problem]

[0010] In order to achieve the aforementioned objects, a desk with a vertically moving top plate according to a first aspect of the present invention is a desk with a vertically moving top plate having a top plate, leg parts disposed on a floor surface and configured to support the top plate to raise and lower such that it is able to be raised and lowered, and a raising and lowering mechanism configured to raise and lower the top plate, wherein a concave section opening downward and configured to accommodate a socket portion of a power source tap to which an electronic device is able to be connected is formed in the top plate.

[0011] In addition, in the first aspect of the present invention, since the concave section configured to accommodate the socket portion of the power source tap is formed in the top plate, a wiring of the electronic device

installed on the top plate can be connected to the socket portion of the power source tap. Then, as the socket portion of the power source tap is accommodated in the concave section, the socket portion of the power source tap can be prevented from protruding from a lower surface of the top plate.

[0012] For this reason, even when the top plate approaches or comes in contact with an article such as a wagon or the like installed below the top plate when the top plate is lowered, the socket portion of the power source tap is not sandwiched between the top plate and the article, and thus, the power source tap or the article can be prevented from being damaged.

[0013] In addition, since the socket portion of the power source tap does not protrude from the lower surface of the top plate, it is possible to prevent a user from coming in contact with the socket portion of the power source tap.

[0014] Further, the socket portion of the power source tap represents a portion in which a socket into which a plug of an electronic device is inserted is installed, and the wiring portion of the power source tap represents a wiring configured to supply power to the socket portion.

[0015] In addition, in the desk with a vertically moving top plate according to a second aspect of the present invention, the socket portion of the power source tap may be magnetically attached on an inner surface of the concave section.

[0016] As the above-mentioned configuration is provided, the socket portion of the power source tap can be easily fixed into the concave section. In addition, a position of the socket portion of the power source tap can be easily changed.

[0017] In addition, in the desk with a vertically moving top plate according to a third aspect of the present invention, the inner surface of the concave section may have a bottom surface section parallel to the floor surface on which the desk with a vertically moving top plate is disposed, and side surface sections extending downward from the bottom surface section, and the socket portion of the power source tap may be magnetically attached on at least one of the bottom surface section and the side surface sections.

[0018] When the socket portion of the power source tap is magnetically attached on the bottom surface section and when magnetically attached on the side surface sections, an orientation of the socket portion of the power source tap is changed. For this reason, as the socket portion of the power source tap is magnetically attached on at least one of the bottom surface section and the side surface sections to match a shape of the concave section or the socket portion of the power source tap, the socket portion of the power source tap does not protrude from the concave section, and the socket portion of the power source tap can be accommodated in the concave section as a whole.

[0019] In addition, in the desk with a vertically moving top plate according to a fourth aspect of the present invention, a hole section through which a wiring of an elec-

tronic device passes in an upward/downward direction may be formed in the top plate, and the hole section may be disposed at a position overlapping the concave section when seen in a plan view.

[0020] As the above-mentioned configuration is provided, the wiring of the electronic device on the top plate can easily reach the concave section, and simplification of the wiring can be achieved. For this reason, the wiring of the electronic device can be easily performed while improving appearance of the wiring of the electronic device.

[0021] In addition, in the desk with a vertically moving top plate according to a fifth aspect of the present invention, the concave section may extend such that at least one end portion in an extension direction reaches an edge portion of the top plate, and a wiring portion of the power source tap may be extracted to the outside of the top plate from the edge portion of the top plate through the concave section.

[0022] As the above-mentioned configuration is provided, since the wiring portion of the power source tap does not hang down from the top plate, the wiring portion of the power source tap can be prevented from being hooked by an article such as a wagon or the like installed below the top plate when the top plate is raised and lowered. In addition, since the wiring portion of the power source tap does not hang down from the top plate, it is possible to prevent a user from coming in contact with the wiring portion of the power source tap.

[Advantageous Effects of Invention]

[0023] According to the desk with a vertically moving top plate of the present invention, it is possible to prevent the power source tap installed below the top plate from coming in contact with an article such as a wagon or the like installed below the top plate or a user.

[Brief Description of Drawings]

[0024]

Fig. 1 is a perspective view showing an example of a desk with a vertically moving top plate according to an embodiment of the present invention from above.

Fig. 2 is a perspective view showing the example of the desk with a vertically moving top plate according to the embodiment of the present invention from below.

Fig. 3 is a cross-sectional view taken along line A-A of Fig. 1.

Fig. 4 is an enlarged view of a rear side of Fig. 3.

Fig. 5 is a side cross-sectional view of a top plate of the desk with a vertically moving top plate according to the embodiment of the present invention.

Fig. 6 is a side cross-sectional view of a front end portion of the top plate of the desk with a vertically

moving top plate according to the embodiment of the present invention.

[Description of Embodiments]

[0025] Hereinafter, a desk with a vertically moving top plate according to an embodiment of the present invention will be described with reference to Figs. 1 to 6.

[0026] Further, in the following description, a lengthwise direction of a long side of a top plate 4 having a rectangular shape in a desk 1 with a vertically moving top plate shown in Figs. 1 and 2 is a leftward/rightward direction, and a lengthwise direction of a short side of the top plate 4 is a forward/rearward direction.

[0027] As shown in Figs. 1 and 2, the desk 1 with a vertically moving top plate according to the embodiment has a pair of leg bodies (leg parts) 2 disposed spaced apart from each other at left and right sides, a connecting member 3 (see Fig. 2) configured to connect the pair of leg bodies 2, and the top plate 4 having a flat plate shape, supported on the leg bodies 2 and disposed on the connecting member 3, and the top plate 4 is configured to be vertically raised and lowered as raising and lowering mechanism units 5 are provided on the pair of leg bodies 2.

[0028] In addition, a control unit 6 (see Fig. 2) configured to control the pair of raising and lowering mechanism units 5 together as described below is installed on the desk 1 with a vertically moving top plate, and further, an operation unit 7 (see Fig. 1) configured to input a raising and lowering operating signal is installed on the raising and lowering mechanism unit 5.

[0029] Each of the leg bodies 2 is configured to have a lower section support body 8 (see Fig. 1) disposed on a floor surface, an upper section support body 9 disposed above the lower section support body 8 and configured to support a lower surface of the top plate 4, and the raising and lowering mechanism unit 5 configured to telescopically connect the lower section support body 8 and the upper section support body 9.

[0030] Since the lower section support body 8 has a plate shape extending forward and rearward, as adjusters 81 are installed at front and rear end portions, a height from the floor surface can be finely adjusted.

[0031] Since the raising and lowering mechanism unit 5 is constituted by the known configuration in the related art, as a plurality of square tubes 51 having different dimensions are relatively movably fitted to each other, the raising and lowering mechanism unit 5 is telescopically movable by driving of a drive mechanism accommodated therein in the upward/downward direction. Accordingly, the raising and lowering mechanism unit 5 telescopically connects the lower section support body 8 and the upper section support body 9.

[0032] The upper section support body 9 is disposed to extend in the forward/rearward direction of the top plate 4 and supports a lower surface of a side end portion of the top plate 4 in the leftward/rightward direction. The

upper section support body 9 is integrally fixed to an upper end portion of the raising and lowering mechanism unit 5 by welding or the like such that a front end side 9a that is a front side of the top plate 4 with respect to the raising and lowering mechanism unit 5 is lengthened and a rear end side 9b that is a rear side of the top plate 4 is shortened.

[0033] As shown in Fig. 3, the top plate 4 is formed in a rectangular plate shape, and has a core 41 obtained by processing a metal plate such as a steel plate or the like, a surface material 42 such as a melamine board or the like configured to cover an upper surface, side end surfaces in the leftward/rightward direction and a front end surface of the core 41, and a cover member 43 configured to cover a rear end portion of the core 41.

[0034] The core 41 has an upper core 45 disposed at an upper side thereof, and three lower cores 46, 47 and 48 disposed below the upper core 45.

[0035] The upper core 45 has a horizontal plate section 45a formed in a rectangular plate shape and having a plate surface that is a horizontal surface, a front plate section 45b continuous with an edge portion of a front side of the horizontal plate section 45a, extending toward the front side in an inclined downward direction, and having a tip portion side folded rearward, side plate sections 45c continuous with left and right edge portions of the horizontal plate section 45a and extending downward, a rear plate section 45d continuous with a rear edge portion of the horizontal plate section 45a and extending downward, and a lower plate section 45e extending forward from a lower end portion of the rear plate section 45d.

[0036] Then, in the upper core 45, an upper surface of the horizontal plate section 45a, the front plate section 45b and outer surfaces of the side plate sections 45c and 45d are covered by the surface material 42, and an outer surface of the rear plate section 45d is covered by the cover member 43.

[0037] The three lower cores 46, 47 and 48 are disposed at intervals in the forward/rearward direction. Among the three lower cores 46, 47 and 48, the core disposed in the rearmost section in the forward/rearward direction is a first lower core 46, the core disposed in an intermediate section is a second lower core 47, and the core disposed in the foremost section is a third lower core 48.

[0038] As shown in Fig. 4, the first lower core 46 is a member extending in the leftward/rightward direction and formed in a cross-sectional shape having a concavo-convex portion in the leftward/rightward direction as a whole. The first lower core 46 has a first vertical plate section 461 disposed in the rearmost section and having a plate surface that is a vertical surface directed in the forward/rearward direction, a first horizontal plate section 462 extending forward from a lower end portion of the first vertical plate section 461 and having a plate surface that is a horizontal surface, a second vertical plate section 463 extending upward from a front end portion of the first horizontal plate section 462 and having a plate surface

that is a vertical surface directed in the forward/rearward direction, a second horizontal plate section 464 extending forward from an upper end portion of the second vertical plate section 463 and having a plate surface that is a horizontal surface, a third vertical plate section 465 extending downward from a front end portion of the second horizontal plate section 464 and having a plate surface that is a vertical surface directed in the forward/rearward direction, a third horizontal plate section 466 extending forward from a lower end portion of the third vertical plate section 465 and having a plate surface that is a horizontal surface, a fourth vertical plate section 467 extending upward from a front end portion of the third horizontal plate section 466 having a plate surface that is a vertical surface directed in the forward/rearward direction, and a fourth horizontal plate section 468 extending forward from an upper end portion of the fourth vertical plate section 467 and having a plate surface that is a horizontal surface.

[0039] The first vertical plate section 461, the second vertical plate section 463, the third vertical plate section 465 and the fourth vertical plate section 467 are disposed at substantially the same height and formed in substantially the same height dimension.

[0040] Then, the first horizontal plate section 462 and the third horizontal plate section 466 are disposed at substantially the same height, and the second horizontal plate section 464 and the fourth horizontal plate section 468 are disposed at substantially the same height.

[0041] The first lower core 46 is fixed to the upper core 45 in a state in which the upper surfaces of the second horizontal plate section 464 and the fourth horizontal plate section 468 abut the lower surface of the horizontal plate section 45a of the upper core 45. Then, when the first lower core 46 is fixed to the upper core 45, the rear surface of the first vertical plate section 461 abuts the front surface of the rear plate section 45d of the upper core 45, and a rear portion of the lower surface of the first horizontal plate section 462 abuts an upper surface of the lower plate section 45e of the upper core 45.

[0042] Then, a concave section 469 surrounded by the second vertical plate section 463, the second horizontal plate section 464 and the third vertical plate section 465 and extending in the leftward/rightward direction to open downward is formed in the first lower core 46. A socket portion 11a (a portion in which a socket into which a plug of an electronic device (not shown) is inserted is installed) of a power source tap 11 configured to supply power to the electronic device installed on the top plate 4 can be accommodated in the concave section 469.

[0043] In the embodiment, since the first lower core 46 is formed of a material having a magnetic property such as steel or the like, when a magnet is installed in the socket portion 11a of the power source tap 11, the socket portion 11a of the power source tap 11 is configured to be magnetically attached on the second vertical plate section 463, the second horizontal plate section 464 and the third vertical plate section 465 that constitute the con-

cave section 469. In the embodiment, the lower surface of the second horizontal plate section 464 corresponds to a bottom surface section of the concave section 469, and facing surfaces of the second vertical plate section 463 and the third vertical plate section 465 correspond to side surface sections of the concave section 469.

[0044] In Fig. 4, the socket portion 11a of the power source tap 11 magnetically attached on the second horizontal plate section 464 is shown by a solid line, and the socket portion 11a of the power source tap 11 magnetically attached on the second vertical plate section 463 and the third vertical plate section 465 is shown by a dotted line.

[0045] Further, the socket portion 11a of the power source tap 11 accommodated in the concave section 469 is disposed not to protrude downward from the lower surface of the top plate 4 (the lower surfaces of the first horizontal plate section 462 and the third horizontal plate section 466 of the first lower core 46).

[0046] Returning to Fig. 3, the second lower core 47 is a member extending in the leftward/rightward direction, and formed in a substantially hat-shaped cross-sectional shape in the leftward/rightward direction as a whole. The second lower core 47 has a first horizontal plate section 471 disposed in the rearmost section and having a plate surface that is a horizontal surface, a first vertical plate section 472 extending downward from a front end portion of the first horizontal plate section 471 and having a plate surface that is a vertical surface directed in the forward/rearward direction, a second horizontal plate section 473 extending forward from a lower end portion of the first vertical plate section 472 and having a plate surface that is a horizontal surface, a second vertical plate section 474 extending upward from a front end portion of the second horizontal plate section 473 and having a plate surface that is a vertical surface directed in the forward/rearward direction, and a third horizontal plate section 475 extending forward from an upper end portion of the second vertical plate section 474 and having a plate surface that is a horizontal surface.

[0047] The first and second vertical plate sections 472 and 474 are disposed at substantially the same height and formed in substantially the same height dimension. Then, the first horizontal plate section 471 and the third horizontal plate section 475 are disposed at substantially the same height.

[0048] Then, the second lower core 47 is fixed to the upper core 45 in a state in which upper surfaces of the first horizontal plate section 471 and the third horizontal plate section 475 abut the lower surface of the horizontal plate section 45a of the upper core 45.

[0049] The third lower core 48 is formed in substantially the same shape as the second lower core 47, and has a first horizontal plate section 471, a first vertical plate section 472, a second horizontal plate section 473, a second vertical plate section 474 and a third horizontal plate section 475 that are substantially the same as the first horizontal plate section 481, the first vertical plate section

482, the second horizontal plate section 483, the second vertical plate section 484 and the third horizontal plate section 485 of the second lower core 47.

[0050] Then, the third lower core 48 is fixed to the upper core 45 in a state in which the upper surfaces of the first horizontal plate section 481 and the third horizontal plate section 485 abut the lower surface of the horizontal plate section 45a of the upper core 45.

[0051] Further, the first horizontal plate section 462 and the third horizontal plate section 466 of the first lower core 46, the second horizontal plate section 473 of the second lower core 47 and the second horizontal plate section 483 of the third lower core 48 are disposed at substantially the same height.

[0052] In addition, in the embodiment, wiring insertion holes 49 (hole sections) passing through upper and lower surfaces of the top plate 4 are formed in both left and right sections of the top plate 4 on the rear side at overlapping positions when seen in a plan view of the concave section 469 of the top plate 4. In the embodiment, two wiring insertion holes 49 are formed with an interval therebetween in the leftward/rightward direction.

[0053] The wiring insertion holes 49 are configured such that a connecting wiring cable 121 of an electronic device such as a display or the like placed on the top plate 4 can be guided to the concave section 469 of the top plate 4. Then, the connecting wiring cable 121 guided to the concave section 469 can be connected to the socket portion 11a of the power source tap 11 disposed in the concave section 469. In the embodiment, the socket portion 11a of the power source tap 11 is magnetically attached at a position on the concave section 469 that does not overlap the wiring insertion hole 49.

[0054] Further, in the embodiment, a wiring portion 11b of the power source tap 11 is disposed in the concave section 469 and extends to one end portion in the leftward/rightward direction to be extracted to the outside of the top plate 4 and is connected to a power supply socket (not shown) installed in a working space through the vicinity of the leg bodies 2.

[0055] In addition, as shown in Fig. 1, the operation unit 7 is installed on a front edge portion of the top plate 4 of the side of the lower surface. The operation unit 7 has operating buttons configured to input raising and lowering operating signals to the raising and lowering mechanism unit 5. Then, a user can drive both of the raising and lowering mechanism units 5 and change arbitrarily the height of the top plate 4 by operating the operation unit 7 and sending a raising and lowering operating signal.

[0056] As shown in Fig. 2, the connecting member 3 extends in the leftward/rightward direction, both of end portions thereof are attached to the pair of upper section support bodies 9 by welding or the like, and thus, the upper section support bodies 9 of the pair of leg bodies 2 are connected. The connecting member 3 is disposed in front of the first lower core 46 of the top plate 4. Accordingly, the concave section 469 of the top plate 4

opens downward without overlapping the connecting member 3 in the upward/downward direction.

[0057] In addition, a space section 31 opening downward is formed in the connecting member 3, and the control unit 6 is fixed to and accommodated in the space section 31 by a fastening screw or the like.

[0058] The control unit 6 is configured to control both of elevating operations of the raising and lowering mechanism units 5 installed on the pair of leg bodies 2, and in the embodiment, is connected to the socket portion 11a of the power source tap 11 disposed in the concave section 469 of the top plate 4 to be operated when electric power is supplied therefrom.

[0059] A unit-connecting wiring cable (not shown) configured to connect the control unit 6 and the pair of raising and lowering mechanism units 5 is connected to the control unit 6 separately from a power supply cable 61, and further, a wiring cable (not shown) for an operation unit of the operation unit 7 is also connected thereto.

[0060] The control unit 6 changes a height of the top plate 4 by controlling an elevating operation of the raising and lowering mechanism unit 5 on the basis of the received signal when the control unit 6 receives a raising and lowering operating signal of the raising and lowering mechanism unit 5 from the operation unit 7 while sending electric power supplied via the power source tap 11 to the raising and lowering mechanism unit 5. Further, the unit-connecting wiring cable, the wiring cable of an operation unit, or the like, is routed in the space section 31.

[0061] A cover member 32 configured to cover the space section 31 and having an upper surface on which a wiring can be placed is attached to the connecting member 3 on the side of the lower surface. The cover member 32 is formed by folding a metal plate, and a lengthwise dimension thereof in the forward/rearward direction is larger than a lengthwise dimension of the connecting member 3 in the forward/rearward direction. Then, when the cover member 32 is attached to the connecting member 3 on the side of the lower surface, the cover member 32 extends in any one of forward and rearward directions of the connecting member 3. In the embodiment, the cover member 32 extends toward a rear side of the connecting member 3. Further, the cover member 32 may extend toward a front side of the connecting member 3 or may extend toward both of the front and rear sides.

[0062] In addition, in the embodiment, an electronic device placing section 33 is hung from the lower surface of the top plate 4. The electronic device placing section 33 is formed in a tubular shape passing in the forward/rearward direction. Accordingly, the wiring of the electronic device installed in the electronic device placing section 33 extracted from the rear side of the electronic device placing section 33 can be connected to the socket portion 11a of the power source tap 11 accommodated in the concave section 469 of the top plate 4, and the wiring extracted from above the top plate 4 to below the top plate 4 through the wiring insertion hole 49 can be connected to the electronic device installed in the elec-

tronic device placing section 33.

[0063] Further, in the embodiment, the desk 1 with a vertically moving top plate may have a configuration as shown in Figs. 5 and 6.

[0064] Fig. 5 is a side cross-sectional view of the top plate of the desk with a vertically moving top plate. Fig. 6 is a side cross-sectional view of a front end portion of the top plate of the desk with a vertically moving top plate.

[0065] As shown in Figs. 1 and 5, the top plate 4 includes a top surface (a work surface) 4t that forms a horizontal work surface on an upper surface thereof. A rear end portion 4b and side end portions 4c and 4c of both sides in the widthwise direction of the top plate 4 are formed from a hanging-down surface Fv vertically hanging down from an outer circumferential end of the top surface 4t and a folded surface Fc folded downward from a lower end of the hanging-down surface Fv toward the inside of the top plate 4 in the horizontal direction.

[0066] In addition, as shown in Fig. 5, a cover member 10 formed of a resin and configured to cover the hanging-down surface Fv is mounted on the rear end portion 4b and the side end portions 4c and 4c of the top plate 4.

[0067] As shown in Figs. 5 and 6, a front end portion 4a of the top plate 4 is continuous with the top surface 4t and has an upper curved surface F1, an upper slant surface (an upper inclined section) F2, a front end upper curved surface (a front end surface) F3, a front end lower curved surface (a lower inclined surface, front end surface) F4 and a lower plane F5.

[0068] The upper curved surface F1 is formed to gradually curve downward from the top surface 4t toward the front side.

[0069] The upper slant surface F2 is continuous with the upper curved surface F1 and formed in a planar shape inclined downward toward the front side. Here, the upper slant surface F2 is formed such that an inclination angle downward with respect to the horizontal direction is, for example, 10° to 20°, more preferably, 15° to 20°.

[0070] The front end upper curved surface F3 configures a portion of a front end surface 4f of the front end portion 4a of the top plate 4, is continuous with the upper slant surface F2 and is formed to be curved downward toward the front side.

[0071] The front end lower curved surface F4 configures a remaining portion of the front end surface of the front end portion 4a of the top plate 4, is continuous with the front end upper curved surface F3 and is formed to be curved rearward toward the lower side.

[0072] The lower plane F5 is continuous with the front end lower curved surface F4 and formed to extend rearward parallel to the top surface 4t.

[0073] As shown in Fig. 5, the top plate 4 is formed to include a base member (a support member) 211, a surface coating material (a coating material) 12, a rear reinforcement member 13, an intermediate reinforcement member 14 and a front reinforcement member 15.

[0074] The base member 211 is formed from a steel plate, and folded and curved such that the top surface

4t, the hanging-down surfaces Fv of the rear end portion 4b and the side end portions 4c, the folded surface Fc, and the upper curved surface F1, the upper slant surface F2, the front end upper curved surface F3, the front end lower curved surface F4 and the lower plane F5 of the front end portion 4a are formed integrally.

[0075] As shown in Fig. 5, for example, two intermediate reinforcement members 14 are formed on a lower surface 4u of the top plate 4 with an interval therebetween in the forward/rearward direction. The intermediate reinforcement members 14 are formed to extend in the widthwise direction of the top plate 4. Each of the intermediate reinforcement members 14 integrally includes a front joining surface 14a and a rear joining surface 14b formed along the lower surface 4u of the top plate 4, a front surface 14c vertically hanging down from the front joining surface 14a, a rear surface 14d vertically hanging down from the rear joining surface 14b, a lower surface 14e disposed in the horizontal surface and configured to connect a lower end of the front surface 14c and a lower end of the rear surface 14d. The intermediate reinforcement member 14 is formed by folding a steel plate. The intermediate reinforcement members 14 are joined by spot welding or the like in a state in which the front joining surface 14a and the rear joining surface 14b abut against the lower surface 4u of the top plate 4.

[0076] As shown in Fig. 6, the front reinforcement member 15 integrally includes a rear joining surface 15a formed along the lower surface 4u of the top plate 4, a rear surface 15b vertically hanging down from the rear joining surface 15a, a lower surface 15c extending forward from a lower end of the rear surface 15b, a step section 15d bent upward in the front end portion of the lower surface 15c, front section support surface 15e extending forward from the step section 15d and formed along an upper surface of the lower plane F5 of the base member 211, a front surface 15f vertically extending upward from a front end of the front section support surface 15e, and a front inclined surface 15g extending rearward from an upper end of the front surface 15f to be inclined upward and formed along a lower side of the upper slant surface F2 of the base member 211. The front reinforcement member 15 is formed by folding a steel plate. The front reinforcement member 15 is joined to the top plate 4 by spot welding or the like while the front section support surface 15e, the front surface 15f and the front inclined surface 15g are inserted between the lower plane F5 of the front end portion 4a of the top plate 4 and the upper slant surface F2 from the rear side and the rear joining surface 15a abuts the lower surface 4u of the top plate 4.

[0077] Next, effects of the desk 1 with a vertically moving top plate according to the embodiment will be described with reference to the accompanying drawings.

[0078] In the desk 1 with a vertically moving top plate according to the embodiment, since the concave section 469 that can accommodate the socket portion 11a of the power source tap 11 is formed in the top plate 4, the wiring of the electronic device installed on the top plate

4 can be connected to the socket portion 11a of the power source tap 11.

[0079] Then, as the socket portion 11a of the power source tap 11 is accommodated in the concave section 469 formed in the top plate 4, the socket portion 11a of the power source tap 11 can be prevented from protruding from the lower surface of the top plate 4.

[0080] For this reason, even if the top plate 4 approaches or comes in contact with an article such as a wagon or the like installed below the top plate 4 when the top plate 4 is lowered, the socket portion 11a of the power source tap and the article can be prevented from being damaged without the socket portion 11a of the power source tap 11 being sandwiched between the top plate 4 and the article.

[0081] In addition, since the socket portion 11a of the power source tap 11 does not protrude from the lower surface of the top plate 4, it is possible to prevent a user from coming in contact with the socket portion 11a of the power source tap 11.

[0082] In addition, as the socket portion 11a of the power source tap 11 is magnetically attached on the inner surface of the concave section 469, the socket portion 11a of the power source tap 11 can be easily fixed into the concave section 469. In addition, a position of the socket portion 11a of the power source tap 11 can be easily changed.

[0083] Further, in the embodiment, the socket portion 11a of the power source tap 11 is configured to be magnetically attached on the second horizontal plate section 464, the second vertical plate section 463 and the third vertical plate section 465 that constitute the concave section 469. Then, an orientation of the socket portion 11a of the power source tap 11 differs when magnetically attached on the second horizontal plate section 464, when magnetically attached on the second vertical plate section 463 and when magnetically attached on the third vertical plate section 465. For this reason, as the socket portion 11a of the power source tap 11 is magnetically attached on any one of the second horizontal plate section 464, the second vertical plate section 463 and the third vertical plate section 465 to match a shape of the concave section 469 or the socket portion 11a of the power source tap 11, the socket portion 11a of the power source tap 11 can be accommodated in the concave section 469 without protruding from the concave section 469.

[0084] In addition, as the wiring insertion hole 49 through which the wiring of the electronic device can be inserted in the upward/downward direction is formed in the top plate 4 and the wiring insertion hole 49 is disposed at a position overlapping the concave section 469 when seen in a plan view, the wiring of the electronic device on the top plate 4 can easily reach the concave section 469 and simplification of the wiring can be achieved. For this reason, the appearance of the wiring of the electronic device can be improved and wiring of the electronic device can be easily performed.

[0085] In addition, since the concave section 469 ex-

tends in the leftward/rightward direction and both end portions in the leftward/rightward direction reach an edge portion of the top plate 4 in the leftward/rightward direction, the wiring portion 11b of the power source tap 11 can be extracted to the outside of the top plate 4 in the leftward/rightward direction through the concave section 469. For this reason, since the wiring portion 11b of the power source tap 11 does not hang down from the top plate 4, when the top plate 4 is raised and lowered, the wiring portion 11b of the power source tap 11 can be prevented from being hooked by an article such as a wagon or the like installed below the top plate 4. In addition, since the wiring portion 11b of the power source tap 11 does not hang down from the top plate 4, it is possible to prevent a user from coming in contact with the wiring portion 11b of the power source tap 11.

[0086] According to the desk 1 with a vertically moving top plate as configured above, as the upper slant surface F2 inclined forward and downward is provided at an upper side of the front end portion 4a of the top plate 4, it is possible to prevent the front end portion 4a of the top plate 4 from biting into a user's body, arm, or the like.

[0087] Accordingly, the desk 1 with a vertically moving top plate can be used in a pleasant use environment. Even when a user performs standing work for a long time and the user leans forward close to the front end portion 4a of the top plate 4, it is possible to prevent the front end portion 4a of the top plate 4 from biting and a large force from being applied to a body region of a user.

[0088] In addition, the top plate 4 has the front end lower curved surface F4 formed below the front end portion 4a and inclined downward and rearward. As the above-mentioned configuration is provided, in comparison with the configuration in which the front end lower curved surface F4 is not formed below the front end portion 4a of the top plate 4, a field of view to a lower space of the top plate 4 widens. In addition, the front end portion 4a of the support body can be shown to be thin, and an appearance of the top plate 4 can be improved.

[0089] Further, the operation units 7 configured to operate an elevating operation of the raising and lowering mechanism unit 5 are installed at a lower side of the front end portion 4a and a rear side of the front end lower curved surface F4 of the top plate 4. As the above-mentioned configuration is provided, visibility of the operation unit 7 installed below the front end portion 4a of the top plate 4 is increased by the front end lower curved surface F4.

[0090] Accordingly, operability when a user vertically elevates the top plate 4 can be improved.

[0091] In addition, in the top plate 4, as the top surface 4t, the upper slant surface F2, the front end upper curved surface F3 and the front end lower curved surface F4 are formed to be integrally continuous with each other, an outer surface 211f of the top plate 4 becomes smooth.

[0092] Further, when a shape of the front end portion 4a of the top plate 4 is formed of a wooden material, a large thickness of the front end portion 4a in the up-

ward/downward direction needs to be provided to secure the strength for the front end portion 4a, for example. On the other hand, when the top plate 4 is constituted by a base member 21 formed of steel, and the surface coating material 12, the strength for the top plate 4 can be secured while reducing a thickness of the front end portion 4a of the top plate 4 such it becomes thin.

[0093] In addition, in the desk 1 with a vertically moving top plate including the above-mentioned top plate 4, the leg bodies 2 have the raising and lowering mechanism units 5 provided at the intermediate section of the top plate 4. In this way, in the case in which the raising and lowering mechanism units 5 that constitute columns of the leg bodies 2 are disposed at the intermediate section of the top plate 4 in the forward/rearward direction, when a load is applied to the front end portion 4a of the top plate 4, a large moment is applied to the raising and lowering mechanism unit 5. In particular, in the desk 1 with a vertically moving top plate in which the top plate 4 can be raised and lowered, when the top plate 4 is raised and lowered, if a load is applied to the front end portion 4a of the top plate 4, anti-overturning properties deteriorate.

[0094] On the other hand, since the upper slant surface F2 is formed on the front end portion 4a of the top plate 4, when a user's hand or an article is placed on the top plate 4, the user's hand or the article cannot be easily placed on the upper slant surface F2. Accordingly, a region where the load is applied is a region behind the upper slant surface F2 due to disposition of the hand or the article placed on the top plate 4. Accordingly, an action point of the load is disposed closer to the raising and lowering mechanism unit 5, and a moment applied to the raising and lowering mechanism unit 5 is reduced. Accordingly, anti-overturning properties of the desk 1 with a vertically moving top plate can be improved.

[0095] In addition, in the top plate 4, the upper slant surface F2 is formed on the front end portion 4a only, and the rear end portion 4b and the side end portions 4c are formed by the hanging-down surface Fv. Accordingly, when the rear end portion 4b or the side end portions 4c of the desk 1 with a vertically moving top plate is disposed to abut against the wall surface, other household goods, or the like, a gap or a concave section cannot be easily generated between the rear end portion 4b or the side end portions 4c of the top plate 4 and the wall surface or the other household goods. As a result, the article can be prevented from falling off from the top plate 4.

[0096] Hereinabove, while the embodiment of the desk 1 with a vertically moving top plate according to the present invention has been described, the present invention is not limited to the embodiment and may be appropriately modified without departing from the spirit of the present invention.

[0097] For example, while the desk 1 with a vertically moving top plate is configured to have the pair of raising and lowering mechanism units 5 and 5 and the control unit 6 and the top plate 4 can be raised and lowered by an operation of the operation unit 7 in the embodiment,

the mechanism configured to raise and lower the top plate 4 may be, for example, a mechanism using a gas spring, a gear, or the like, in addition thereto.

[0098] In addition, while the embodiment has a configuration in which the top plate 4 has the core 41 formed by processing a metal plate such as a steel plate or the like, and the surface material 42 such as a melamine board or the like configured to cover the surface of the core 41, the top plate 4 may be constituted by a plywood formed of wood as long as the concave section configured to accommodate the socket portion 11a of the power source tap 11 is formed.

[0099] In addition, while the concave section 469 extends in the leftward/rightward direction and is formed at a rear side of the top plate 4 in the embodiment, a shape or a place formed with respect to the top plate 4 may be appropriately set.

[0100] In addition, while the inner surface of the concave section 469 has a magnetic property in the embodiment, the magnetic property may not be provided. In this case, the socket portion 11a of the power source tap 11 may be fixed to the concave section 469 by a fixing tool such as a screw, a hook formed in the concave section 469, or the like. In addition, a plate member on which the socket portion 11a of the power source tap 11 can be placed may be installed below the concave section 469.

[0101] In addition, in the embodiment, the second horizontal plate section 464, the second vertical plate section 463 and the third vertical plate section 465 that constitute the concave section 469 have a magnetic property, the socket portion 11a of the power source tap 11 is magnetically attached on the sections, and a portion of the inner surface of the concave section 469 has a magnetic property. The socket portion of the power source tap 11 may be magnetically attached on the portion having a magnetic property.

[0102] In addition, while the wiring insertion hole 49 is formed in the top plate 4 in the embodiment, the wiring insertion hole 49 may be not formed.

[0103] In addition, while the two wiring insertion holes 49 are formed at positions overlapping the concave section 469 when seen in a plan view in the embodiment, the wiring insertion holes 49 may be formed at positions that do not overlap the concave section 469 when seen in a plan view and the number of wiring insertion holes 49 formed in the top plate 4 may be appropriately set.

[0104] In addition, while the concave section 469 extends in the leftward/rightward direction, both end portions in the leftward/rightward direction reach the edge portion of the top plate 4 in the leftward/rightward direction and the wiring portion 11b of the power source tap 11 is extracted to the outside of the top plate 4 in the leftward/rightward direction through the concave section 469 in the embodiment, the wiring portion 11b of the power source tap 11 may be extracted to the lower side or the outer side of the top plate 4 without passing through the concave section 469.

[0105] In addition, for example, while the upper slant

surface F2 is formed as the upper inclined section of the front end portion 4a of the top plate 4 in the embodiment, the upper inclined section is not limited to a planar inclined surface and may be a curved surface as long as the upper inclined surface may be inclined forward and downward. Similarly, the lower inclined surface formed on the front end portion 4a is also not limited to the front end lower curved surface F4 and a planar inclined surface may be formed as long as the lower inclined surface is inclined downward and rearward.

[0106] In addition, while the upper slant surface F2 is formed on only the front end portion 4a of the top plate 4 in the embodiment, there is no limitation thereto. According to a use type of the desk 1 with a vertically moving top plate, a configuration in which the upper slant surface F2, the front end lower curved surface F4, and so on, are formed on the rear end portion 4b or the side end portions 4c of the top plate 4 in the same manner may be provided.

[0107] In addition, the desk 1 with a vertically moving top plate may have any other configuration such as any configuration, disposition, number of installed leg bodies 2, and so on, as long as the top plate 4 can be raised and lowered.

[0108] In addition, the configuration of the raising and lowering mechanism unit 5 may be any other configuration as long as the top plate 4 can be raised and lowered.

[Industrial Applicability]

[0109] According to the desk with a vertically moving top plate of the present invention, the power source tap installed below the top plate can be prevented from coming in contact with an article such as a wagon or the like installed below the top plate or a user.

[Reference Signs List]

[0110]

1	Desk with a vertically moving top plate	40
2	Leg bodies (leg parts)	
3	Connecting member	
4	Top plate	
5	Raising and lowering mechanism unit (raising and lowering mechanism)	45
11	Power source tap	
11a	Socket portion	
11b	Wiring portion	
49	Wiring insertion hole (hole section)	
464	Second horizontal plate section (bottom surface section)	50
463	Second vertical plate section (side surface section)	
465	Third vertical plate section (side surface section)	
469	Concave section	55

Claims

1. A desk with a vertically moving top plate having a top plate, leg parts disposed on a floor surface and configured to support the top plate to raise and lower such that it is able to be raised and lowered, and a raising and lowering mechanism configured to raise and lower the top plate, wherein a concave section opening downward and configured to accommodate a socket portion of a power source tap to which an electronic device is able to be connected is formed in the top plate.
2. The desk with a vertically moving top plate according to claim 1, wherein the socket portion of the power source tap is magnetically attached on an inner surface of the concave section.
3. The desk with a vertically moving top plate according to claim 2, wherein the inner surface of the concave section has a bottom surface section parallel to the floor surface on which the desk with a vertically moving top plate is disposed, and side surface sections extending downward from the bottom surface section, and the socket portion of the power source tap is magnetically attached on at least one of the bottom surface section and the side surface section.
4. The desk with a vertically moving top plate according to claim 1, wherein a hole section through which a wiring of an electronic device passes in an upward/downward direction is formed in the top plate, and the hole section is disposed at a position overlapping the concave section when seen in a plan view.
5. The desk with a vertically moving top plate according to claim 2, wherein a hole section through which a wiring of an electronic device passes in an upward/downward direction is formed in the top plate, and the hole section is disposed at a position overlapping the concave section when seen in a plan view.
6. The desk with a vertically moving top plate according to claim 3, wherein a hole section through which a wiring of an electronic device passes in an upward/downward direction is formed in the top plate, and the hole section is disposed at a position overlapping the concave section when seen in a plan view.
7. The desk with a vertically moving top plate according to any one of claims 1 to 6, wherein the concave section extends such that at least one end portion in an extension direction reaches an edge portion of the top plate, and a wiring portion of the power source tap is extracted

to the outside of the top plate from the edge portion
of the top plate through the concave section.

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FIG. 1

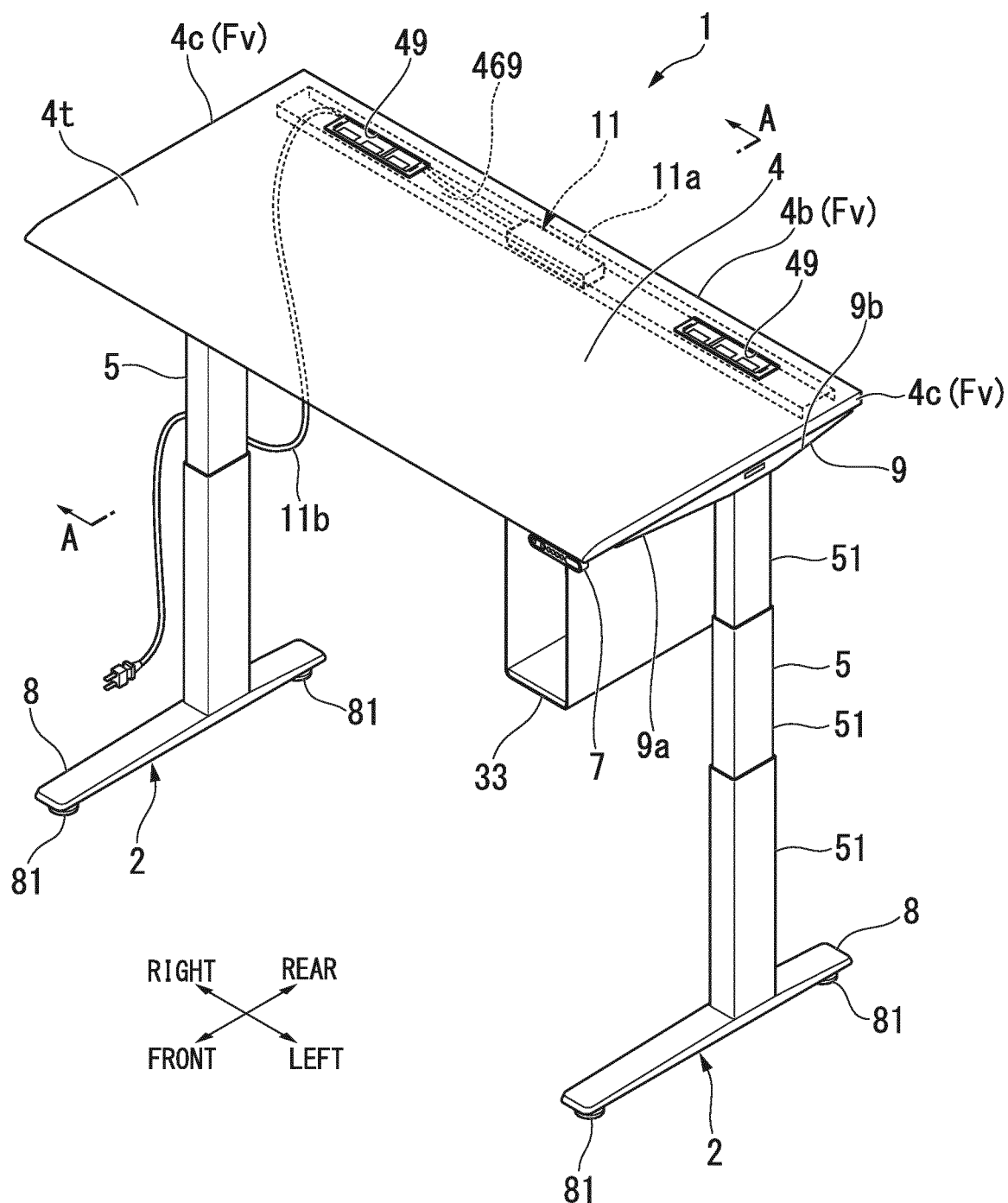


FIG. 2

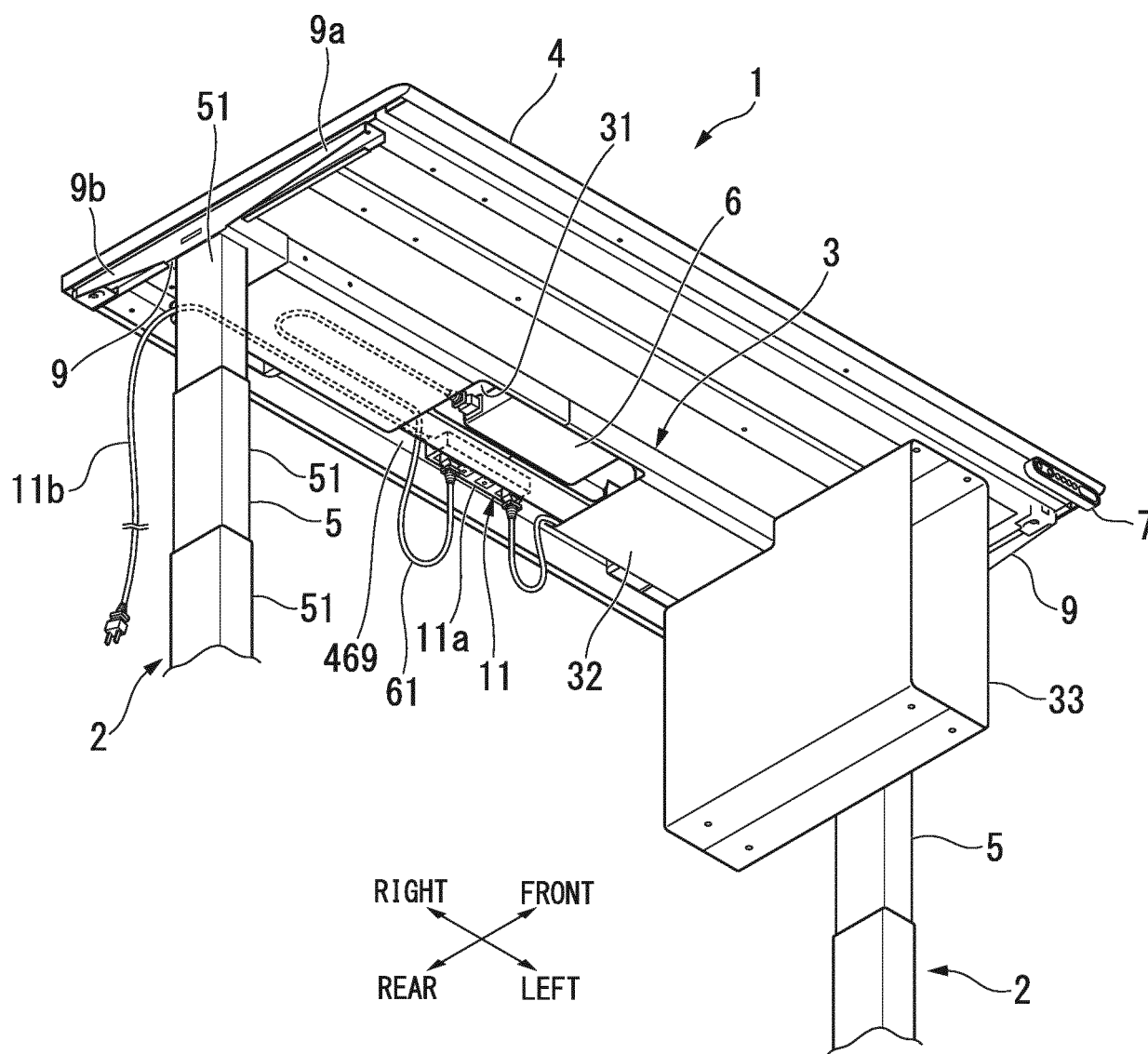


FIG. 3

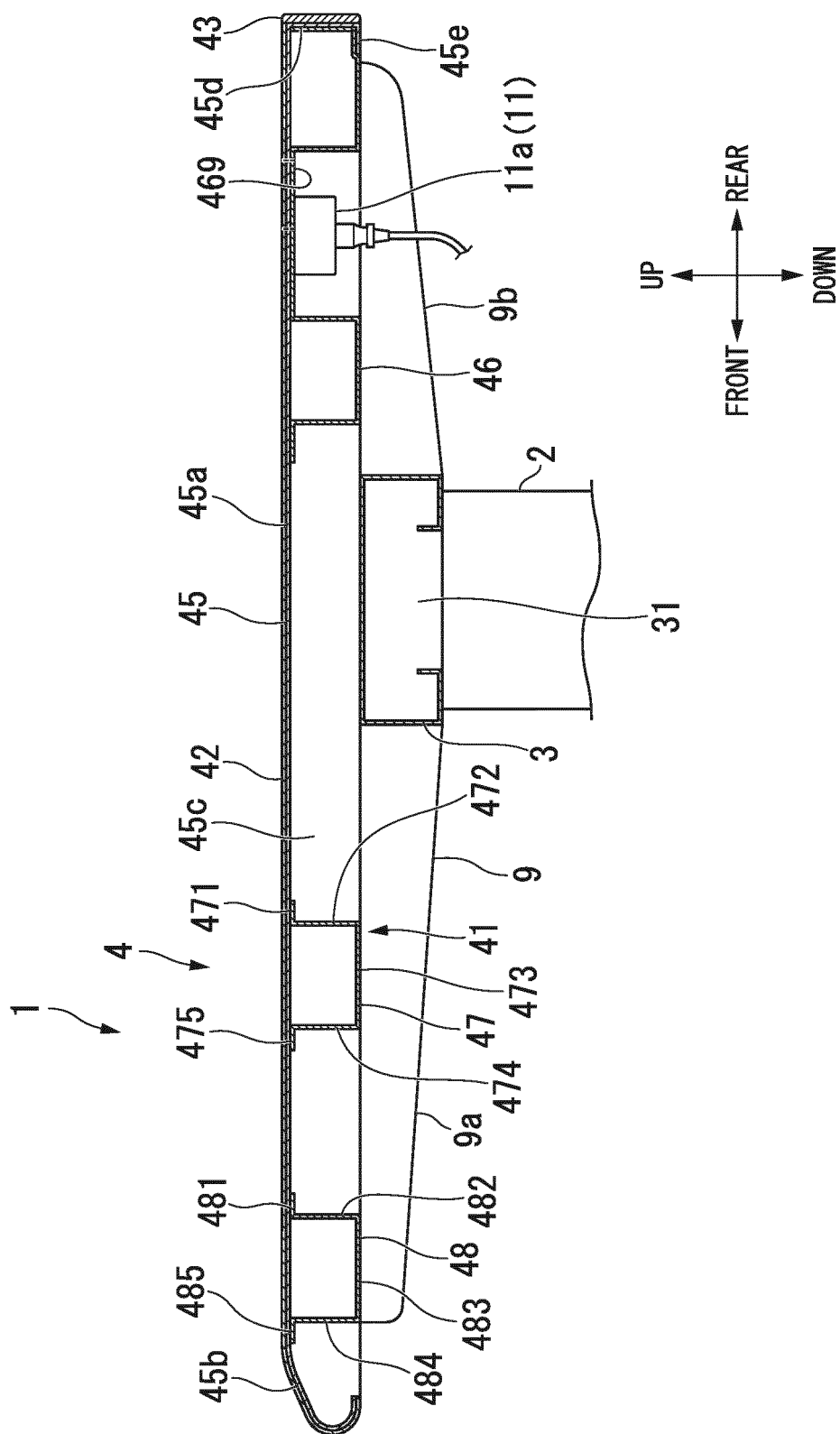


FIG. 4

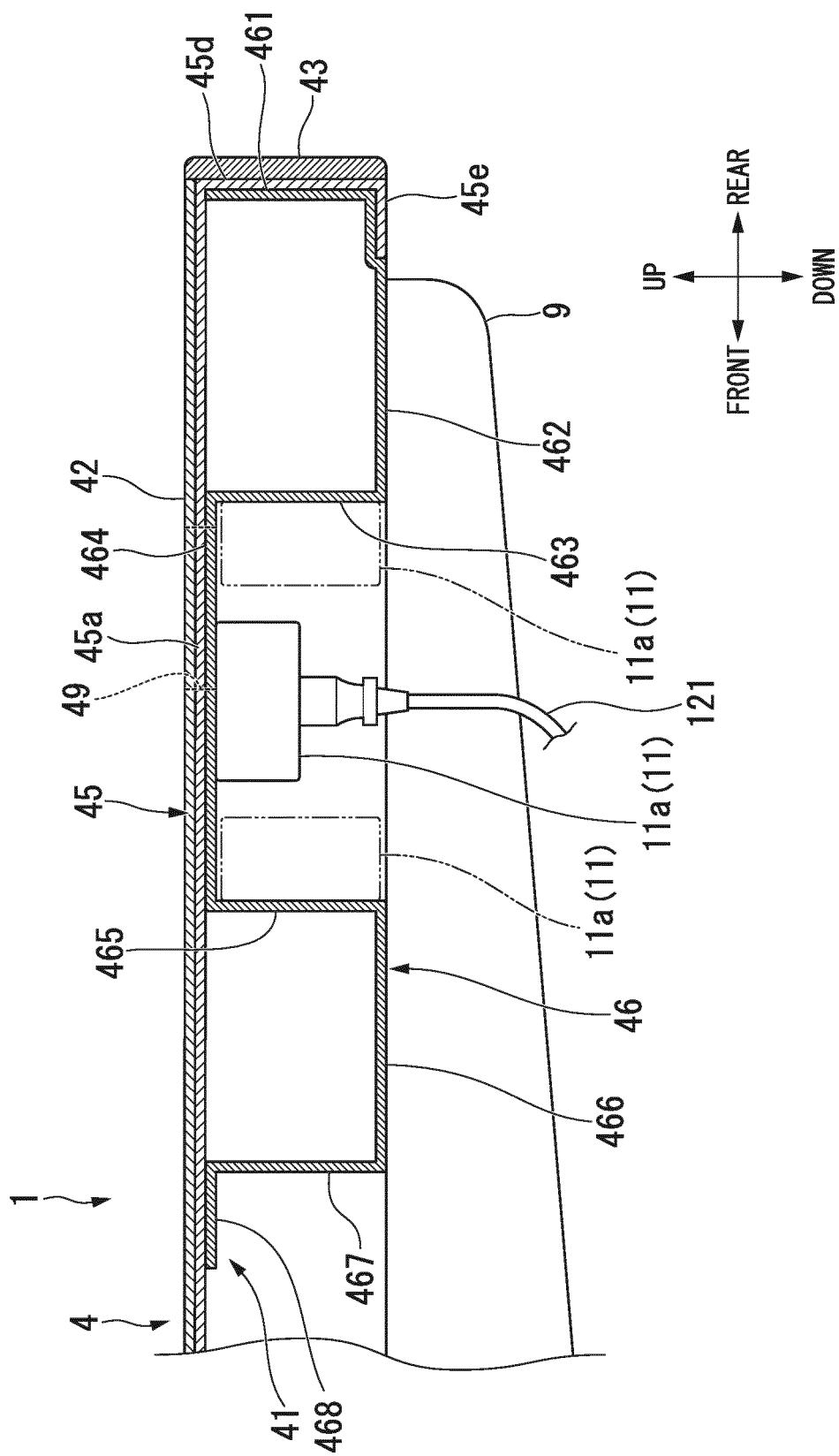


FIG. 5

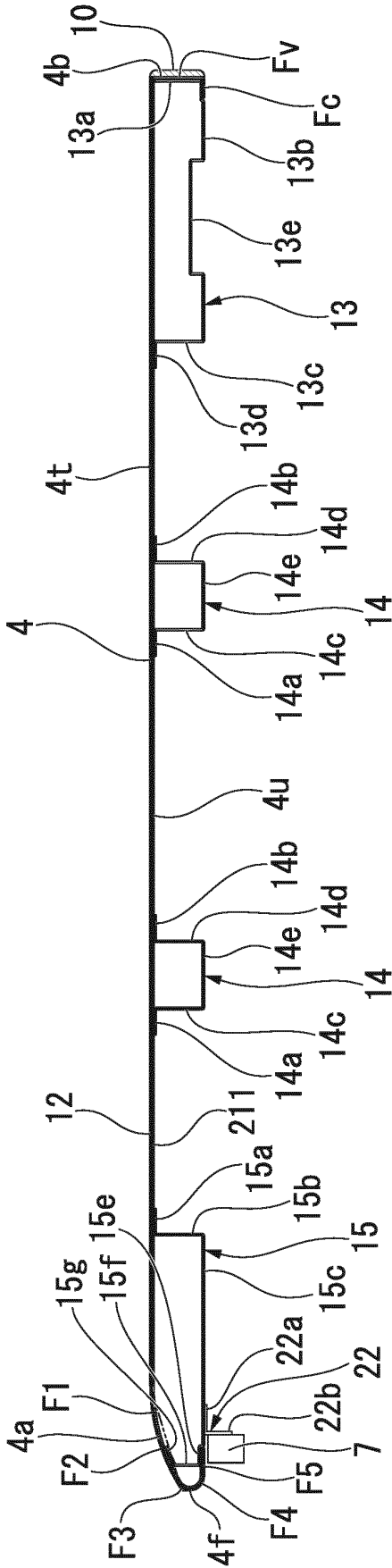
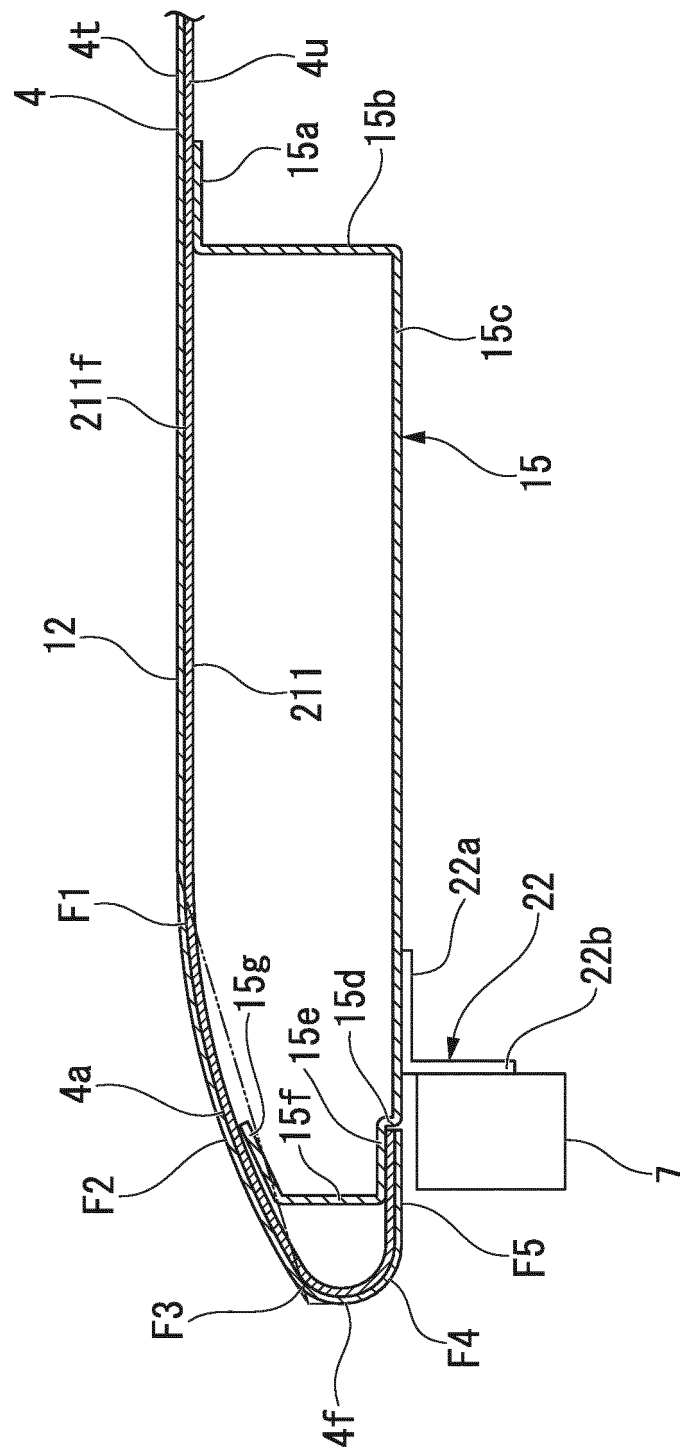


FIG. 6



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2016/052112

A. CLASSIFICATION OF SUBJECT MATTER

A47B9/20(2006.01)i, A47B13/00(2006.01)i, A47B97/00(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)

A47B9/20, A47B13/00, A47B97/00

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.
Y	JP 2004-351109 A (Itoki Crebio Corp.), 16 December 2004 (16.12.2004), 0068, 0069; fig. 10 (Family: none)	1-7
Y	JP 2011-229608 A (Okamura Corp.), 17 November 2011 (17.11.2011), 0016 to 0020; fig. 1, 2 (Family: none)	1-7
Y	JP 2001-104060 A (Kokuyo Co., Ltd.), 17 April 2001 (17.04.2001), claim 1; 0006 (Family: none)	2, 3, 5, 6

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

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"&" document member of the same patent family

Date of the actual completion of the international search
25 February 2016 (25.02.16)Date of mailing of the international search report
08 March 2016 (08.03.16)Name and mailing address of the ISA/
Japan Patent Office
3-4-3, Kasumigaseki, Chiyoda-ku,
Tokyo 100-8915, Japan

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2016/052112

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	JP 2001-309822 A (Otsuka Chemical Co., Ltd.), 06 November 2001 (06.11.2001), 0010, 0011; fig. 1 to 3 (Family: none)	2, 3, 5, 6
P, A	JP 2015-33422 A (Home Taste Corp.), 19 February 2015 (19.02.2015), claim 1; fig. 1 (Family: none)	2, 3, 5, 6

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REFERENCES CITED IN THE DESCRIPTION

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