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(54) **HEIGHT-ADJUSTABLE TABLE HAVING REINFORCED TABLE TOP**

(57) The present invention relates to a height-adjustable table comprising a table top comprising a first table face and a second table face, and at least a first leg assembly having a first leg end and a second leg end, the first leg assembly comprising a first leg member and a second leg member relatively movable in relation to each other along a longitudinal axis. The second table face comprises at least a first recess arranged to receive a first guide rail where the first leg end of the leg assembly is connected with the guide rail.

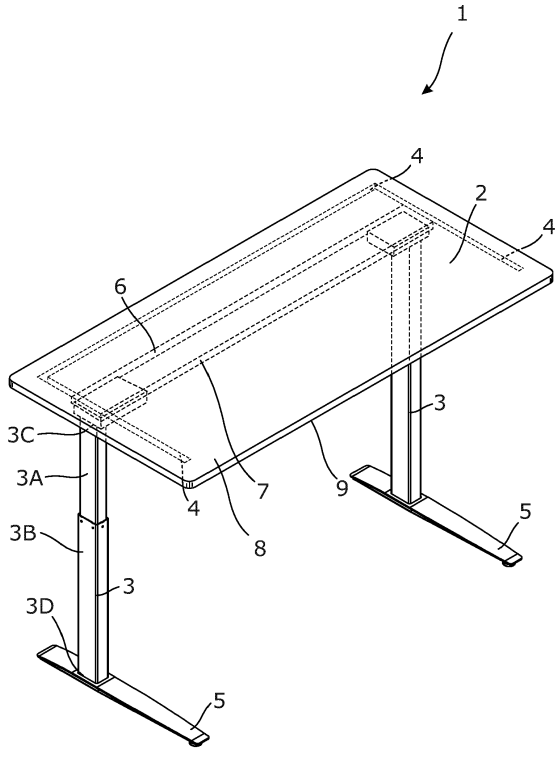

Fig. 1

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Description

Field of the invention

[0001] The present invention relates to a height-adjustable table comprising a table top comprising a first table face and a second table face, and at least a first leg assembly having a first leg end and a second leg end, the first leg assembly comprising a first leg member and a second leg member relatively movable in relation to each other along a longitudinal axis.

Background art

[0002] During recent years, height-adjustable tables, i.e. sit/stand tables, have increasingly been used in e.g. offices.

[0003] When sitting at a table, it is desired to have the table top as close to the thighs as possible. However, since the traditional build-up of a fixed height had to leave plenty of room for users of different sizes sitting at the table, the surface underneath the table was less important. However, both the ability to change the height of the table and the increasing use of electronic equipment has changed the desired designs of tables.

[0004] More and more often, multiple monitors are attached on the very edge of the table top, and thereby, they subject a heavy load on the edge of the table top. Therefore, both the table top itself and the leg assemblies are subjected to a moment or torque from the load e.g. monitors. In this context, the moment is considered a quantity that represents the magnitude of force applied to a rotational system at a distance from the axis of rotation i.e. a load subjected to the perimeter of the table top a distance from the support i.e. the leg assembly. Furthermore, ergonomically correct tables with a thin table top allowing the user to lower the table to a position as close to his or her legs/thighs as possible are increasingly required. However, the thin table top reduces the strength of the table top which is traditionally supported by strong profiles attached to the table top.

Summary of the invention

[0005] It is an object of the present invention to wholly or partly overcome the above disadvantages and drawbacks of the prior art. More specifically, it is an object to provide an improved height-adjustable table comprising a table top that is thin due to the ergonomic demands while still providing sufficient strength to withstand the loads of everyday use.

[0006] Furthermore, it is an object of the invention to provide a height-adjustable table comprising a table top having a substantially even surface in the area of the table top immediately above the legs or thighs of a user.

[0007] The above objects, together with numerous other objects, advantages and features, which will become evident from the below description, are accomplished by a solution in accordance with the present invention by a height-adjustable table comprising:

- a table top comprising a first table face and a second table face, and
- at least a first leg assembly having a first leg end and a second leg end, the first leg assembly comprising a first leg member and a second leg member relatively movable in relation to each other along a longitudinal axis,

wherein the second table face comprises at least a first recess arranged to receive a first guide rail where the first leg end of the leg assembly is connected with the guide rail.

[0008] In this way, it is achieved that the table top may easily be adjusted in relation to the at least one leg assembly. If a load on the table top needs to be supported decentrally, it is advantageous that the leg assembly of the height-adjustable table may be moved to obtain a more preferred load distribution in the leg. When changing the distance from the load to the leg, i.e. the "arm", when calculating the bending moment, it is possible to reduce the moment on the leg. The load could be heavy monitors arranged on the one side of the table top, in which situation it would be beneficial to move the leg assembly towards the side of the monitors. Furthermore, the fact that many table users have three or more monitors, the table needs to allow for the user to turn in order to be correctly oriented towards each monitor. Long-term torsion of the back spine is highly dangerous for the health, and therefore, it is important that the table user may continue to have his or her legs and torso pointing in the same direction. When the rails are integrated in the table top, it is possible for the user the move his or her legs freely under the table top without the legs being blocked by supporting rails under the table top.

[0009] A problem with height-adjustable tables is that the leg assembly needs to function regardless of the load distribution on the table top. Considering a leg assembly connected with the table at a centrally arranged point, a load on a part of the outer perimeter of the table top subjects a bending moment on the leg assembly. In order to ensure that the table continues to be height-adjustable, it is beneficial that the leg assembly may be moved to a point that supports the table top in a manner that results in a smaller bending moment on the leg assembly.

[0010] The height-adjustable table described above may further comprise a second guide rail.

[0011] In this way, it is possible to further stabilise the table top in relation to the at least one leg.

[0012] Furthermore, the height-adjustable table may further comprise a first transverse member.

[0013] The transverse member may be attached to the leg assembly in order to stabilise the leg in relation to the table top.

[0014] Also, the leg assembly may comprise a motorised height-adjustment means.

[0015] Additionally, the leg assembly may comprise a spring-loaded height-adjustment means.

[0016] Moreover, the first and/or second guide rail may be even with the second table surface of the table top.

[0017] In this way, it is possible to generate a firm connection between the table parts. In addition, the second table face may comprise a plurality of recesses and a plurality of guide rails.

[0018] Further, the leg assembly may comprise a foot arranged at the second end of the leg.

[0019] Also, the guide rails may have a C-profiled cross-section.

[0020] Furthermore, the guide rails may have an I-profiled cross-section.

[0021] Furthermore, the height-adjustable table may comprise a plurality of leg assemblies.

[0022] Moreover, the leg assemblies may be kept in position by one or more transverse members.

[0023] In addition, the leg assemblies may be connected with the guide rails by a spring-loaded ball connection.

[0024] In this way, it is possible to release the pressure on the balls and adjust the position of the leg assemblies in relation to the guide rails in a manner not requiring tools.

[0025] Also, the guide rail may be made of aluminium.

[0026] Additionally, the guide rail may be made of stainless steel.

[0027] Furthermore, the guide rail may be made of fibre-reinforced polymer.

[0028] In addition, the rails may be arranged more than 20 mm from the outer perimeter of the table top.

[0029] Moreover, the depth of the recess arranged to receive the rail may be approximately 20-80%, more preferably 30-70%, or even more preferably 40-60% of the thickness of the table top.

[0030] Also, the table top may have a thickness of 10-70 mm, preferably 15-60 mm, more preferably 20-50 mm, or even more preferably 25-40 mm.

[0031] Additionally, the first and/or second guide rail may comprise threaded apertures for fastening the leg assembly(ies) to the guide rails.

[0032] Further, the threaded apertures for fastening the legs to the guide rails may be arranged in nuts slidably arranged in the rails.

[0033] The height-adjustable table may further comprise a first transverse member extending from a first guide rail to a second guide rail, the transverse member being arranged to support the at least one leg assembly.

[0034] The guide rail may project from the second surface of the table top. In this way a firm connection between the guide rail and e.g. a transverse member is ensured.

[0035] The guide rail may project less than 5 mm from the second surface of the table top more preferred less than 2 mm from the second surface.

[0036] Furthermore, the transverse member may be arranged substantially perpendicularly to the guide rail.

[0037] Also, the height-adjustable table may comprise a further transverse member.

[0038] Moreover, the at least one leg assembly may be arranged between two transverse members.

[0039] In addition, the transverse member may have an L-shaped cross-section.

[0040] In this way, it is achieved that the transverse member is rigid and still of low weight.

[0041] Additionally, the guide rails may comprise slidably arranged bolts arranged to connect the at least one leg assembly with the rails.

[0042] Finally, the at least one leg assembly may comprise a fastening plate connecting the table top with the first leg end.

Brief description of the drawings

[0043] The invention and its many advantages will be described in more detail below with reference to the accompanying schematic drawings, which for the purpose of illustration show some non-limiting embodiments and in which

Fig. 1 shows a height-adjustable table according to the invention,

Fig. 2 is an exploded view of the height-adjustable table of Fig. 1,

Fig. 3 is a schematic diagram of a table top comprising integrated rails,

Figs. 4A-4F show cross-sectional views of different embodiments of the integrated rails of Fig. 3,

Fig. 5 shows an embodiment of the table top comprising more integrated rails.

Fig. 6 shows an embodiment of the guide rail,

Figs. 7A-7F show embodiments of the guide rails mounted in a table top,

Fig. 8 shows an embodiment of a height-adjustable table having one leg assembly,

Fig. 9 shows an embodiment of a height-adjustable table having one leg assembly,

Fig. 10 shows an embodiment of a height-adjustable table having one leg assembly,

Fig. 11 shows a height-adjustable table having two leg assemblies and one transverse member,

Fig. 12 shows a height-adjustable table having two leg assemblies and one transverse member,

Fig. 13 shows a height-adjustable table having var-

ious equipment attached in the guide rails, and

Fig. 14 shows deflection of a table top of a height-adjustable table having one leg assembly.

[0044] All the figures are highly schematic and not necessarily to scale, and they show only those parts which are necessary in order to elucidate the invention, other parts being omitted or merely suggested.

Detailed description of the invention

[0045] Fig. 1 shows a height-adjustable table 1 comprising a table top 2 and two leg assemblies 3. The table top 2 comprises an integrated guide rail 4. Furthermore, the leg assemblies 3 each comprises a foot or a base plate 5. Each leg assembly comprises a first leg member 3A and a second leg member 3B. The feet or base plate 5 may be connected to each other, thereby forming a single base plate joining both leg assemblies 3. A first and a second transverse member 6, 7 are shown with dotted lines. The table top 2 comprises a first face 8 and a second face 9. The first leg end 3C is connected with the table top 2 via the transverse members 6, 7, and the second leg end 3D is connected with the feet 5 or base plate.

[0046] Fig. 2 shows the table of Fig. 1 seen from below, and similarly, Fig. 3 shows the table of Fig. 2 in an exploded view. It is seen that the rails 4 are arranged in recesses 10 in the second face 9 of the table top 2. In order to adjust the height of the leg assemblies, a linear actuator is arranged in each of the leg assemblies 3. In this embodiment, the leg assemblies 3 comprise an electrical motor arranged in a motor housing 11. The motor housing 11 is arranged between the first transverse member 6 and the second transverse member 7. Both the first transverse member 6 and the second transverse member 7 have an L-shaped cross-section. They may also have a T-shaped cross-section. In both ways, it is achieved that the transverse member(s) is/are rigid and still of low weight. It will be understood that other cross-sections may be applied too, such as rectangular, square or triangular cross-sections or variations thereof. The transverse members 6, 7 comprise a number of apertures 26, 27 for connecting with e.g. the motor housing 11. The apertures may be substantially circular apertures 26 or elongated apertures 27. The motor housing 11 may also be arranged inside the leg assembly, and in such an embodiment, one member of the leg assembly would be connected with the transverse members.

[0047] Fig. 4 shows a heavy load 12 attached on the transverse rail 15. The transverse rail 15 is a specific rail. When the heavy load 12 is subjected to the perimeter 16 of the table top 2, a bending moment BM is subjected on the leg assemblies 3. Particularly because the first leg member 3A and the second leg member 3B of a leg assembly 3 need to be slidably mounted in relation to each other, the function of the leg assembly 3 is effected by such a bending moment BM caused by the load 12 subjected to the table.

[0048] The section where the two leg members at least touch each other, and hence the point affected the most, e.g. in a fully elevated position of the table, is indicated with a dotted circle 16. In order to minimise the effect of the bending moment BM, the leg assemblies 3 may be moved along an arrow d1. When moving the leg assemblies 3 further towards the transverse rail 15, the distance parallel to d1, i.e. the "arm" used to calculate the torque, is shortened, and hence, the bending moment BM is reduced. In a similar manner, if the table 1 was likely to be subjected to even more heavy loads at the perimeter opposite the monitors 13, the leg assemblies 3 would have to be moved further away from the monitors.

[0049] Figs. 5A-5D show different embodiments of the table top comprising recesses 10 for receiving the guide rails 4 and/or transverse rails 15. It will be understood by the person skilled in the art that the recesses 10, and thereby the rails 4, 15, may be arranged in various other positions in the second face 9 of the table top 2. In order to relate the embodiment of Fig 4 to Figs. 5A-5D, it is indicated as an example in Fig. 5A and Fig. 5C how the direction d1 should be seen. The direction d1 is the same for all embodiments in Figs. 5A-5D.

[0050] Fig. 6 shows a cross-sectional view of the rail 4. The rail 4 comprises a number of corrugations 20 extending from the side wall 21 of the rail. The corrugations 20 serve to keep the rail affixed in the recess 10 (not shown) in the table top, and hence in the correct position in the table top. In embodiments where the table top is made from medium density fibreboard (MDF), the corrugations 20 may be enough to affix the guide rails to the table top. Affixing the guide rail to the table top may also be carried out by speed prongs, nails, screws or glue, either in addition to the corrugations or alone. The rail comprises an aperture 22 for providing access for fastening means, e.g. for fastening a transverse member or leg assembly to the rail 4. The rail may be further affixed in the recesses by glue or screws or similar fastening means. The aperture 22 provides access to a guide area 23. The general outline of the guide rail 4 is a C-profile. The inner guide surface 24 is arranged to receive e.g. a nut or the head of a bolt in order to fully connect the rail with a leg, monitor arm or similar (not shown). The guide rail 4 comprises a first outer surface 25 and a second outer surface 26. The guide rail may be manufactured from aluminium, stainless steel or another ridged material.

[0051] Figs. 7A-7F show different embodiments of a guide rail 4 arranged in recesses 10 seen in a cross-sectional view including a part of the table top 2. All the embodiments of guide rails 4 are preferably made from a material that makes the table top 2 stronger than if the table top 2 was made of a uniform material. Hence, the mixing of the properties of e.g. a Medium Density Fibreboard (MDF) table top 2 and an aluminium guide rail 4 enhances the properties of the table top 2. The table top

2 including the guide rails 4 becomes more resistant to forces applied resulting in a torque. Fig. 7A shows a C-profile embedded in the second face 9 of the table top 2. It is seen in Figs. 7A-7F as well as in the other figures that the first face 8 of the table top is not affected by embedding the guide rails 4 in a recess 10 in the second face of the table top. Fig. 7B shows a guide rail profile similar to that of Fig. 7A, furthermore comprising an additional projecting part for providing correct arranging of e.g. a bolt 30 having an external thread. The head of the bolt, hence the entire bolt, is slidably arranged in the guide rail 4. Fig. 7C shows a nut 31 comprising an internal thread 32 slidably arranged in the guide rail 4. The nut 31 may have opposing surfaces for preventing the nut from being rotated when a bolt is screwed into the internal thread 32. Fig. 7D shows that the guide rail 4 is in fact solid, i.e. a solid guide rail 33 comprising a number of apertures having internal threads 32. Fig. 7E shows a guide rail having a section 34 arranged centrally between a first section 35 and a second section 36, all three sections forming an I-profile. In order to connect the guide rail of Fig. 7E with another part, a clamp or a hook (not shown) may be used for connecting with the second section. Fig. 7F shows an embodiment similar to that of Fig. 7E, having wheels 37 arranged for rolling on the second section 36 on each side of the centrally arranged section 34. All embodiments of the guide rails 4 may be connected to the table top 2 by press fits or by having a spike on the outer surfaces of the guide rail 4 or e.g. by having speed prongs for being forced into the sides of the recess of the table top. Furthermore, all the guide rails 4 may be connected with the table top 2 by glue 29 thereby gluing the table top and the guide rail together. The guide rails shown in the Fig. 5A-5F are substantially even with the second surface 9 of the table top. The guide rail 4 may project in order to assure a firm connection with e.g. the transverse member (not shown).

[0052] Figs. 8, 9 and 10 show a height-adjustable table having just one leg assembly 3. This embodiment features five guide rails 4 where the one guide rail is a transverse rail 15. All the guide rails 4 are mounted in recesses 10 in the second face 9 of the table top 2 and are shown with dotted lines. It is shown in Fig. 9 that the free end, i.e. the first leg end 3C of the first leg member 3A, i.e. the one end of the leg assembly 3, comprises a mounting plate 40 for stabilising the connection between the table top 2 and the leg assembly 3. In the opposite end of the leg assembly 3, i.e. the second leg end 3D of the second leg member 3B, and hence opposite the stabilising plate 40 of the first leg member 3A, a foot or base plate 5 is mounted. In Figs. 9 and 10, the height-adjustable table 1 comprises two transverse guide rails 15. In Fig. 8, the height-adjustable table comprises two centrally arranged guide rails 4 apart from the guide rails 4 arranged at the periphery of the table top 2.

[0053] Figs. 11 and 12 show two leg assemblies 3 connected by a transverse member 6, i.e. a single cross bar. This traditional construction may cause the table top to flex or twist, thereby making the entire table unstable. The supports 50 keep the table top stiff at the ends but restricts the movement of the user. However, when introducing the guide rails, i.e. reinforcing rails, to the table top, the situation depicted in the Fig. 11 is less likely to occur. Furthermore, having two transverse members, i.e. two cross bars, also assists in strengthening the height-adjustable table as a whole. Hence, the guide rails integrated in the table top stiffen both the table top itself and the table as a whole, but do not entail the drawback of restricting the movement of the user's legs underneath the table top.

[0054] Fig. 13 shows that the guide rails 4 may also be used for attaching different types of equipment to the table top in an easy and secure manner. Such equipment could be privacy screen holders 70 or monitor arms/bag hooks 75. Furthermore, the cable tray could be attached to the guide rails 4. The cable tray may extend in the full length of the table. In order to provide for both inbound and outbound positions of the leg assemblies 3, the cable tray 80 may be provided with cut-outs 60. The cut-outs 60 may have blinds to be taken off immediately before positioning the leg assemblies. The equipment as well as the leg assemblies could be connected with the guide rails by a spring-loaded ball connection. In this way, it is possible to release the pressure on the balls and adjust the position of e.g. the leg assemblies in relation to the guide rails in a manner not requiring tools.

[0055] Fig. 14 shows the kind of deflections in the table top 2 that is sought avoided by integrating guide rails in the table top. If a heavy load 90 is placed at the corner of the table top 2, the corner of the table top will deflect. Such a heavy load may be a person sitting at the corner or the height-adjustable table being in its "stand" position with a person leaning heavily on it with his or her elbows or arms. The deflecting corners 85 will deflect less with guide rails to strengthen the table top. The table top 2 is able to withstand a heavier torque applied.

[0056] Furthermore, a problem with height-adjustable tables is that the leg assembly needs to function regardless of the load distribution on the table top. Considering a leg assembly connected with the table at a centrally arranged point, a load on a part of the outer perimeter of the table top subjects a bending moment on the leg assembly. In order to ensure that the table continues to be height-adjustable, it is beneficial that the leg assembly may be moved to a point that supports the table top in a manner that results in a smaller bending moment on the leg assembly.

[0057] Although the invention has been described in the above in connection with preferred embodiments of the invention, it will be evident for a person skilled in the art that several modifications are conceivable without departing from the invention as defined by the following claims.

Claims

1. A height-adjustable table (1) comprising:

   - a table top comprising a first table face and a second table face, and
   - at least a first leg assembly having a first leg end and a second leg end, the first leg assembly comprising a first leg member and a second leg member relatively movable in relation to each other along a longitudinal axis,

   wherein the second table face comprises at least a first recess arranged to receive a first guide rail where the first leg end of the leg assembly is connected with the guide rail.

2. A height-adjustable table (1) according to claim 1, further comprising a second guide rail.

3. A height-adjustable table (1) according to claim 2, further comprising a first transverse member.

4. A height-adjustable table (1) according to any of claims 1-3, wherein the leg assembly comprises a motorised height-adjustment means.

5. A height-adjustable table (1) according to any of the preceding claims, wherein the leg assembly comprises a spring-loaded height-adjustment means.

6. A height-adjustable table (1) according to any of the preceding claims, wherein the first and/or second guide rail is/are even with the second face of the table top.

7. A height-adjustable table (1) according to any of the preceding claims, wherein the first and/or second guide rail comprises threaded apertures for fastening the leg assembly(ies) to the guide rails.

8. A height-adjustable table (1) according to claim 7, wherein the threaded apertures for fastening the legs to the guide rails are arranged in nuts slidably arranged in the rails.

9. A height-adjustable table (1) according to any of the preceding claims, further comprising a first transverse member extending from a first guide rail to a second guide rail, the transverse member being arranged to support the at least one leg assembly.

10. A height-adjustable table (1) according to claim 9, wherein the transverse member is arranged substantially perpendicularly to the guide rail.

11. A height-adjustable table (1) according to claim 9 or 10, wherein the height-adjustable table comprises a further transverse member.

12. A height-adjustable table (1) according to claim 11, wherein the at least one leg assembly is arranged between two transverse members.

13. A height-adjustable table (1) according to any of the preceding claims, wherein the threaded apertures for fastening the legs to the guide rails are arranged in nuts slidably arranged in the rails.

14. A height-adjustable table (1) according to any of the preceding claims, wherein the guide rails comprise slidably arranged bolts arranged to connect the at least one leg assembly with the rails.

15. A height-adjustable table (1) according to any of the preceding claims, wherein the at least one leg assembly comprises a fastening plate connecting the table top with the first leg end.

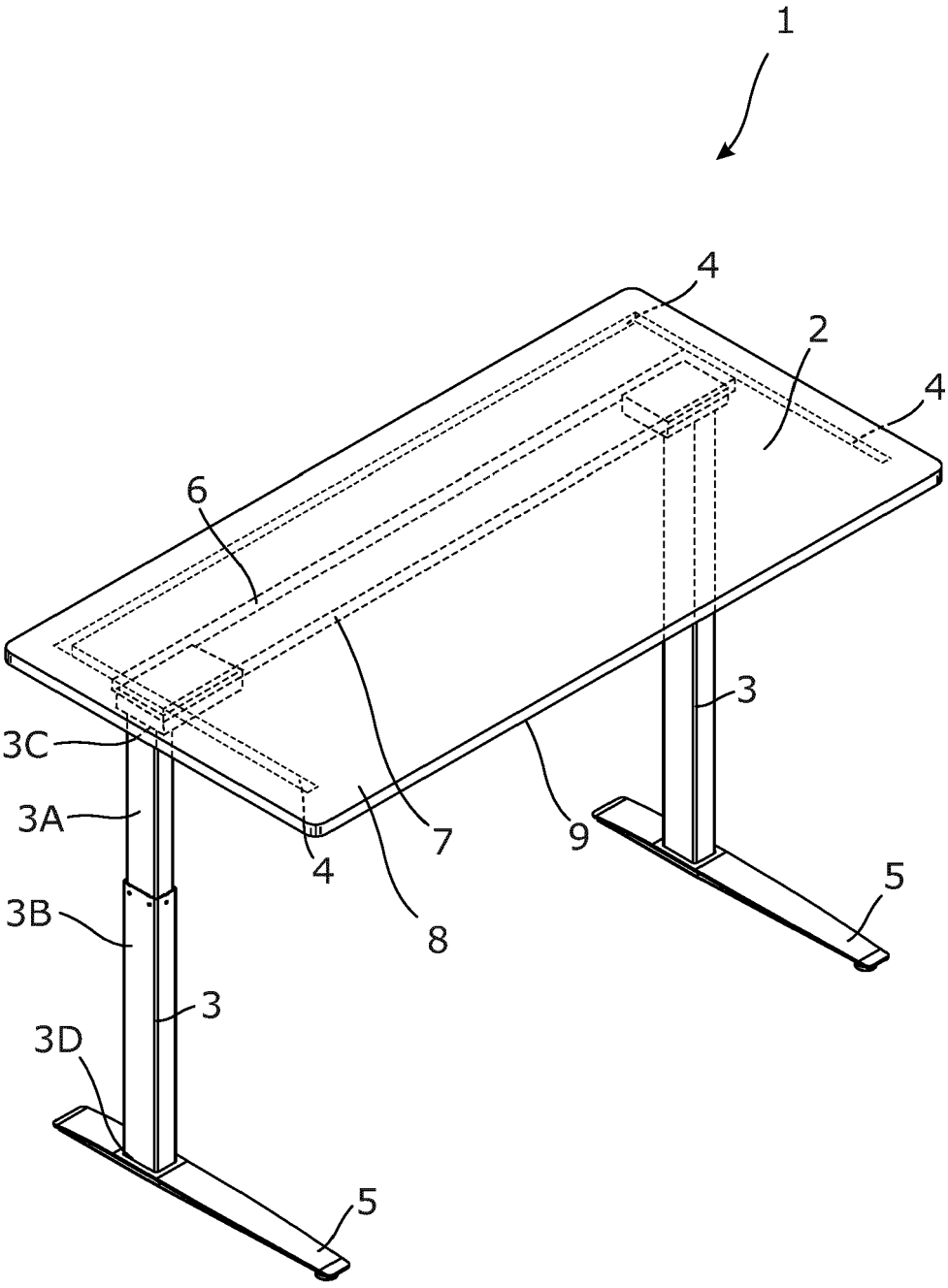

Fig. 1

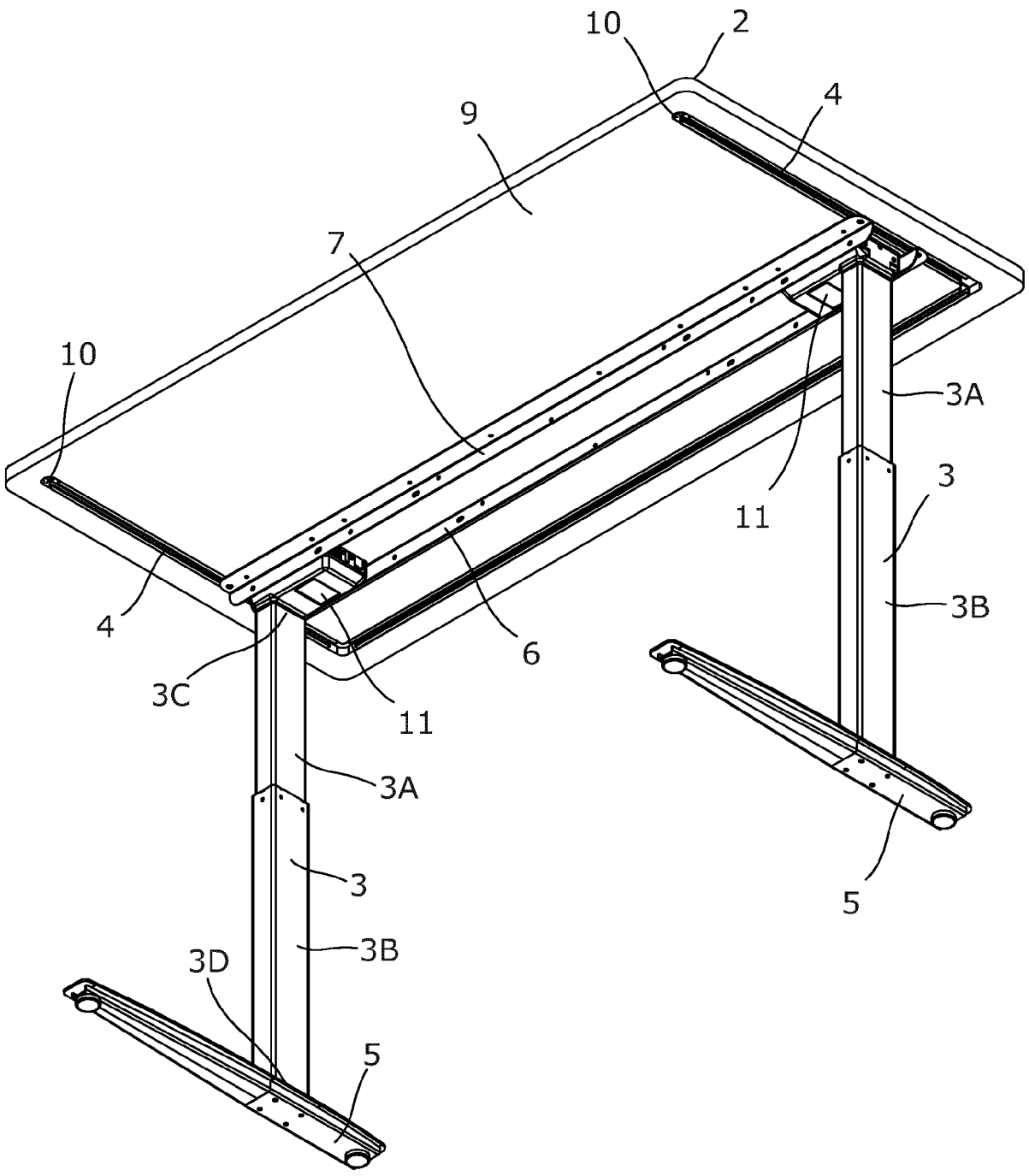

Fig. 2

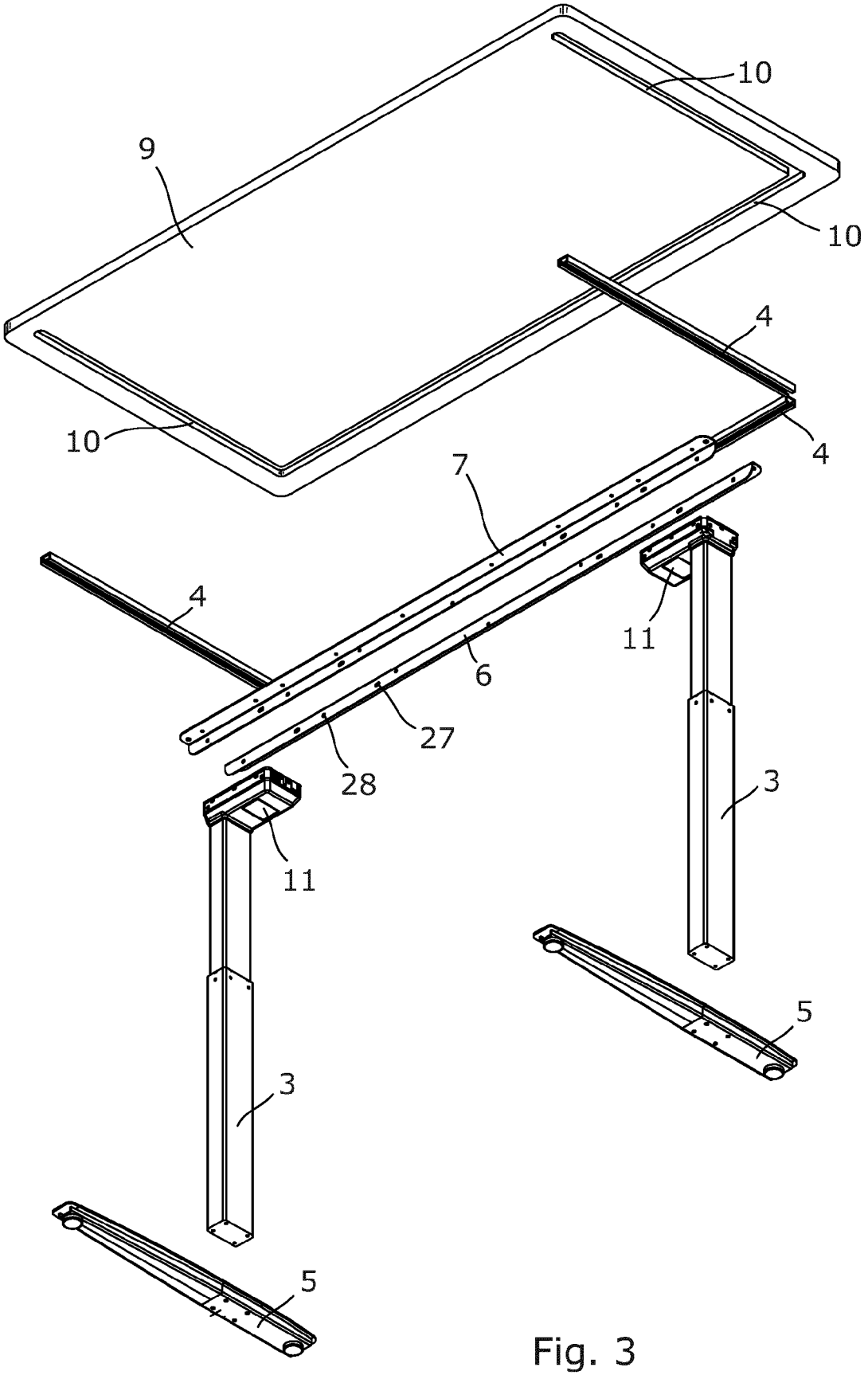

Fig. 3

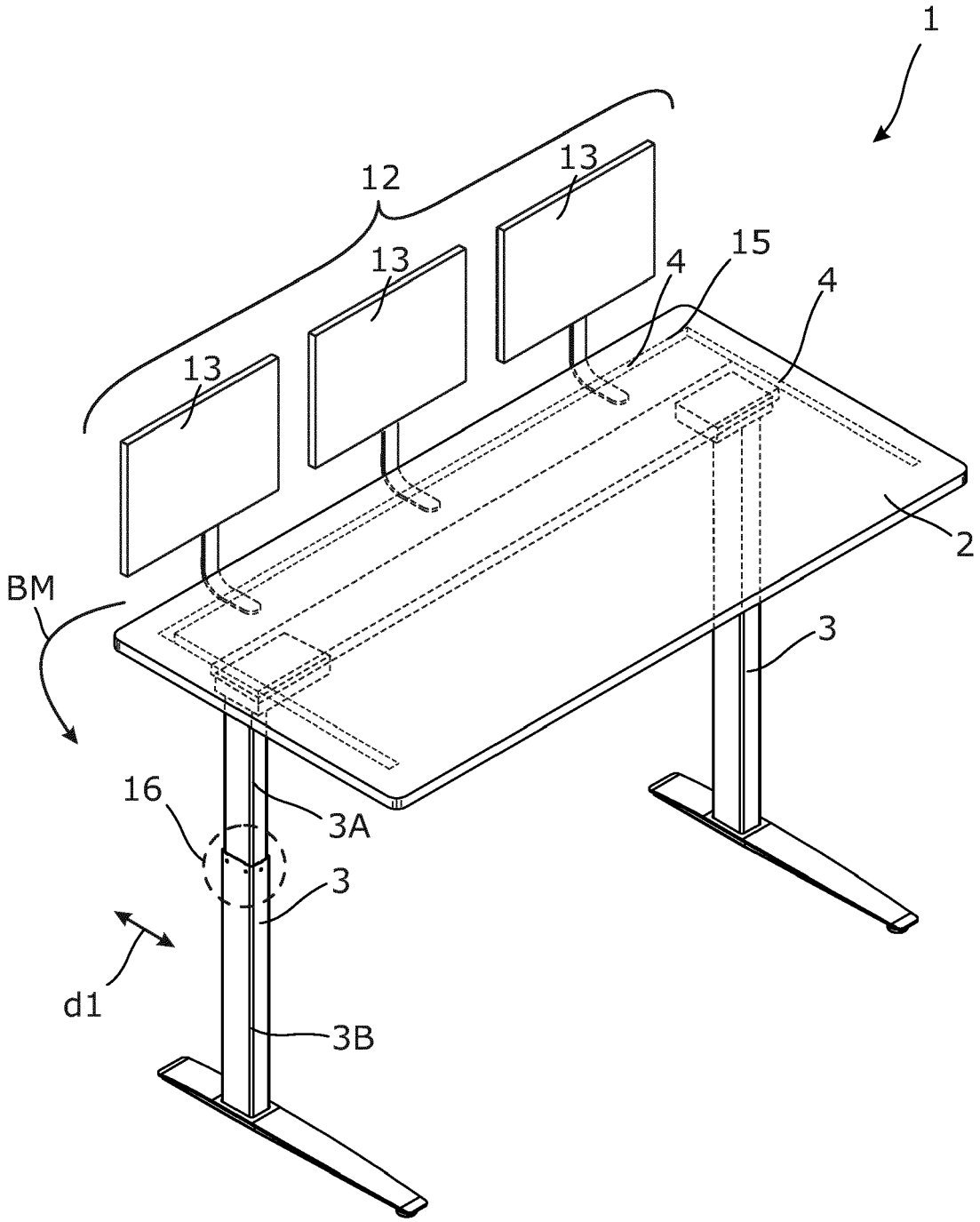

Fig. 4

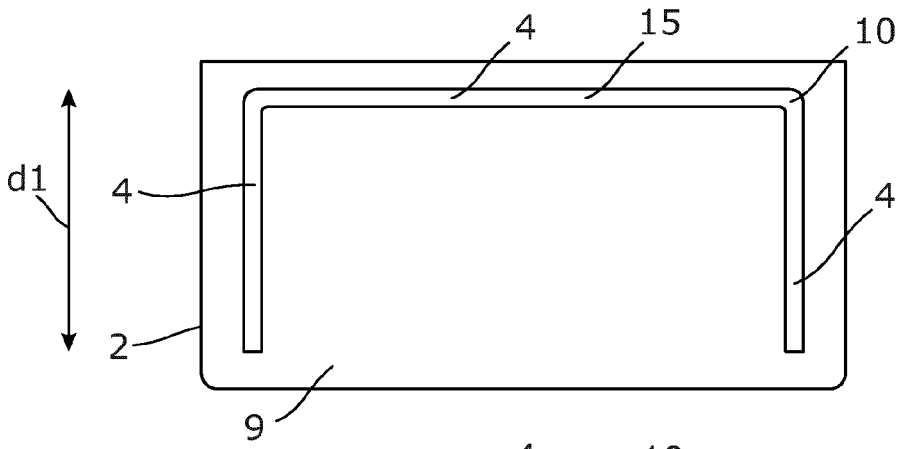

Fig. 5A

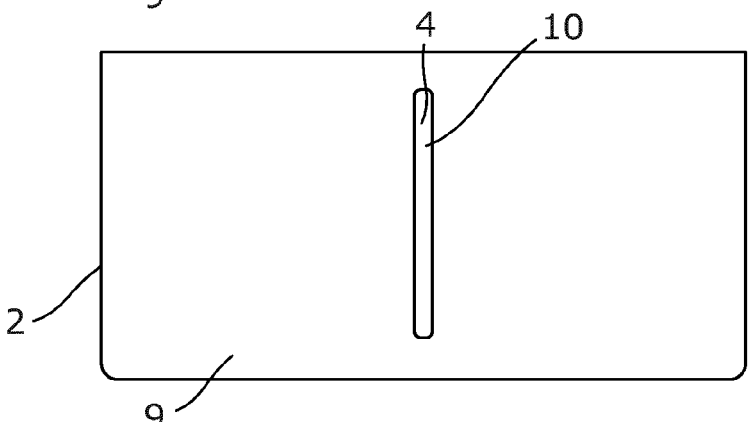

Fig. 5B

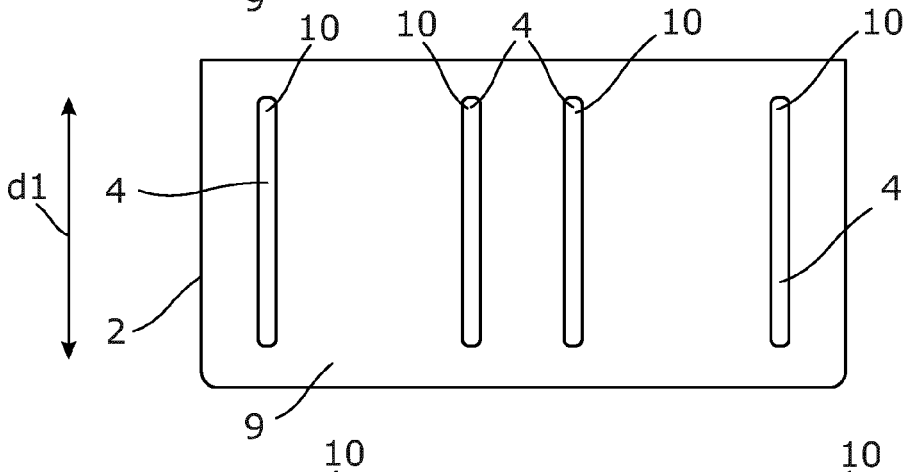

Fig. 5C

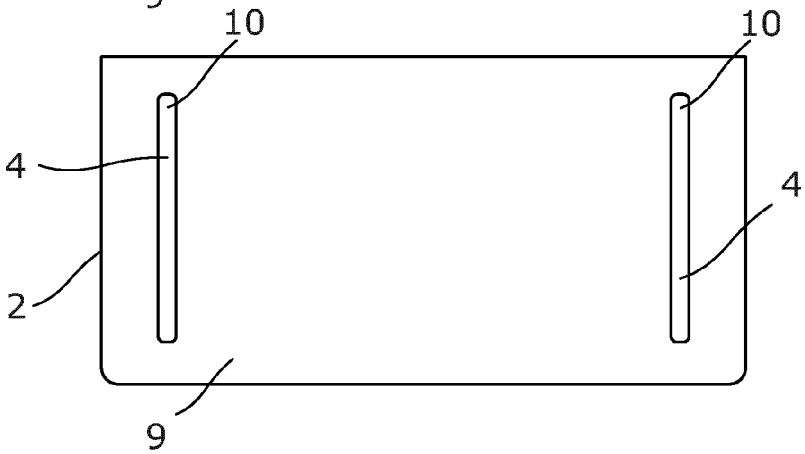

Fig. 5D

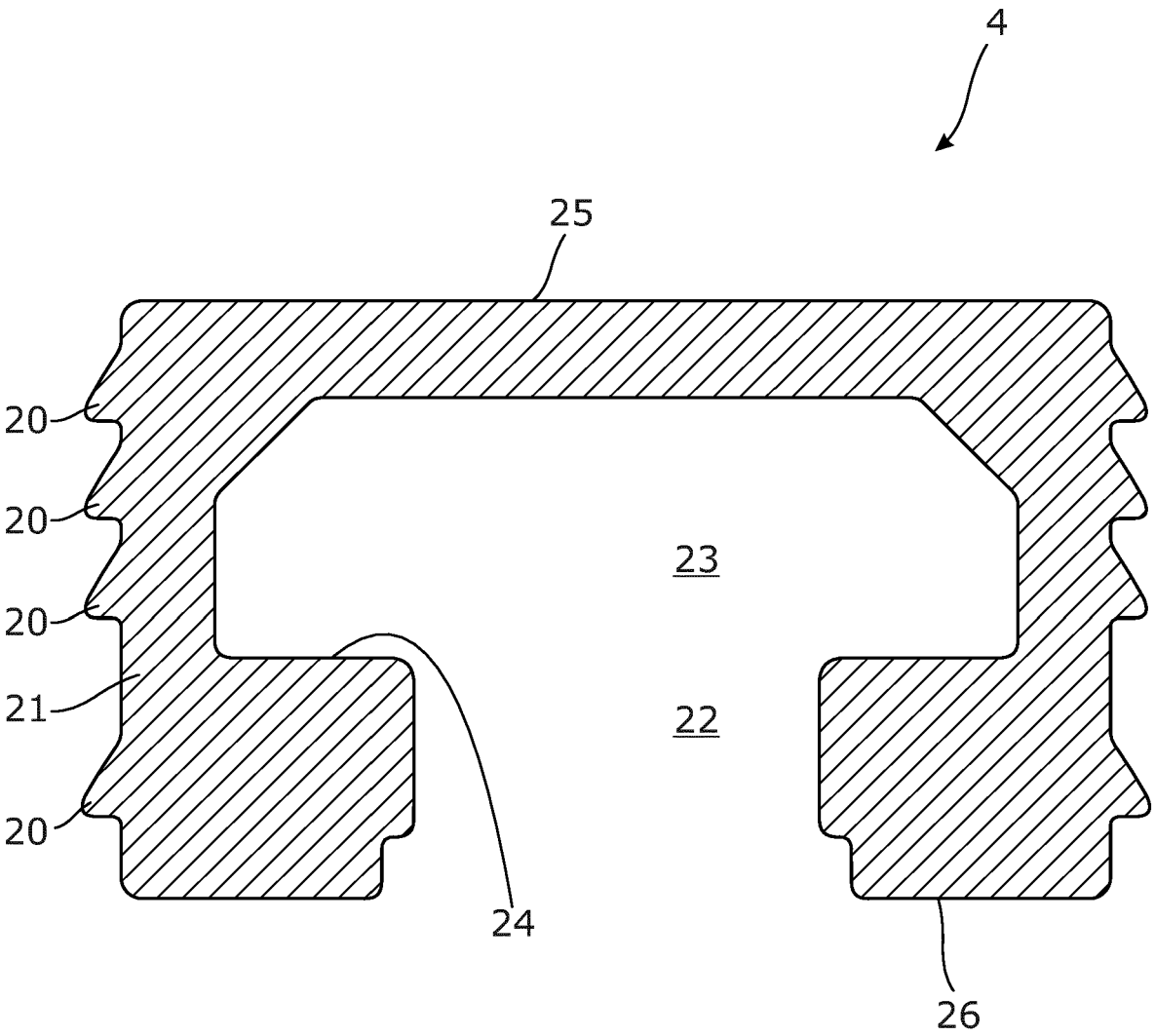

Fig. 6

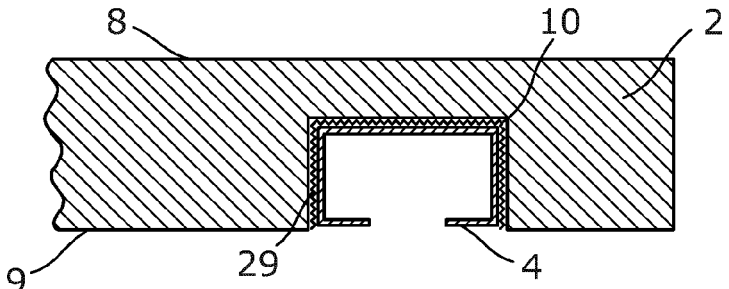

Fig. 7A

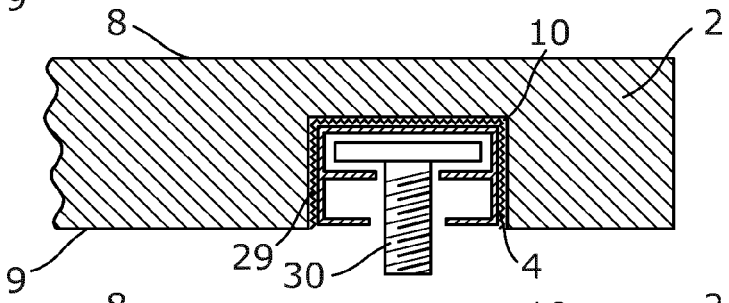

Fig. 7B

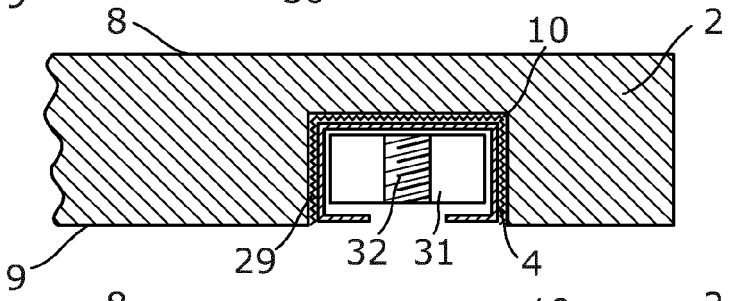

Fig. 7C

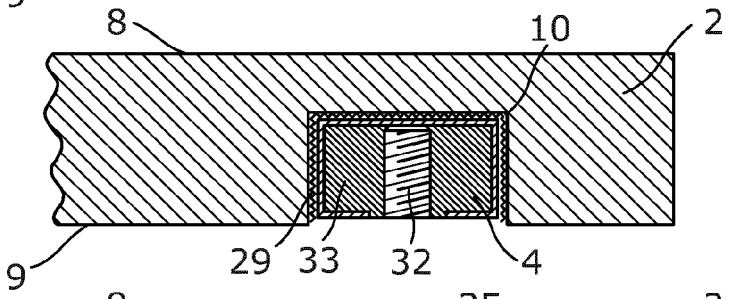

Fig. 7D

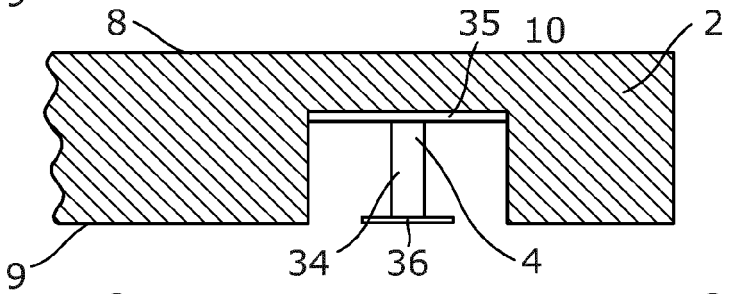

Fig. 7E

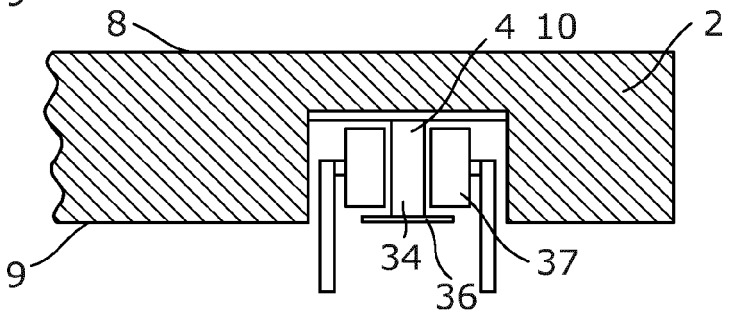

Fig. 7F

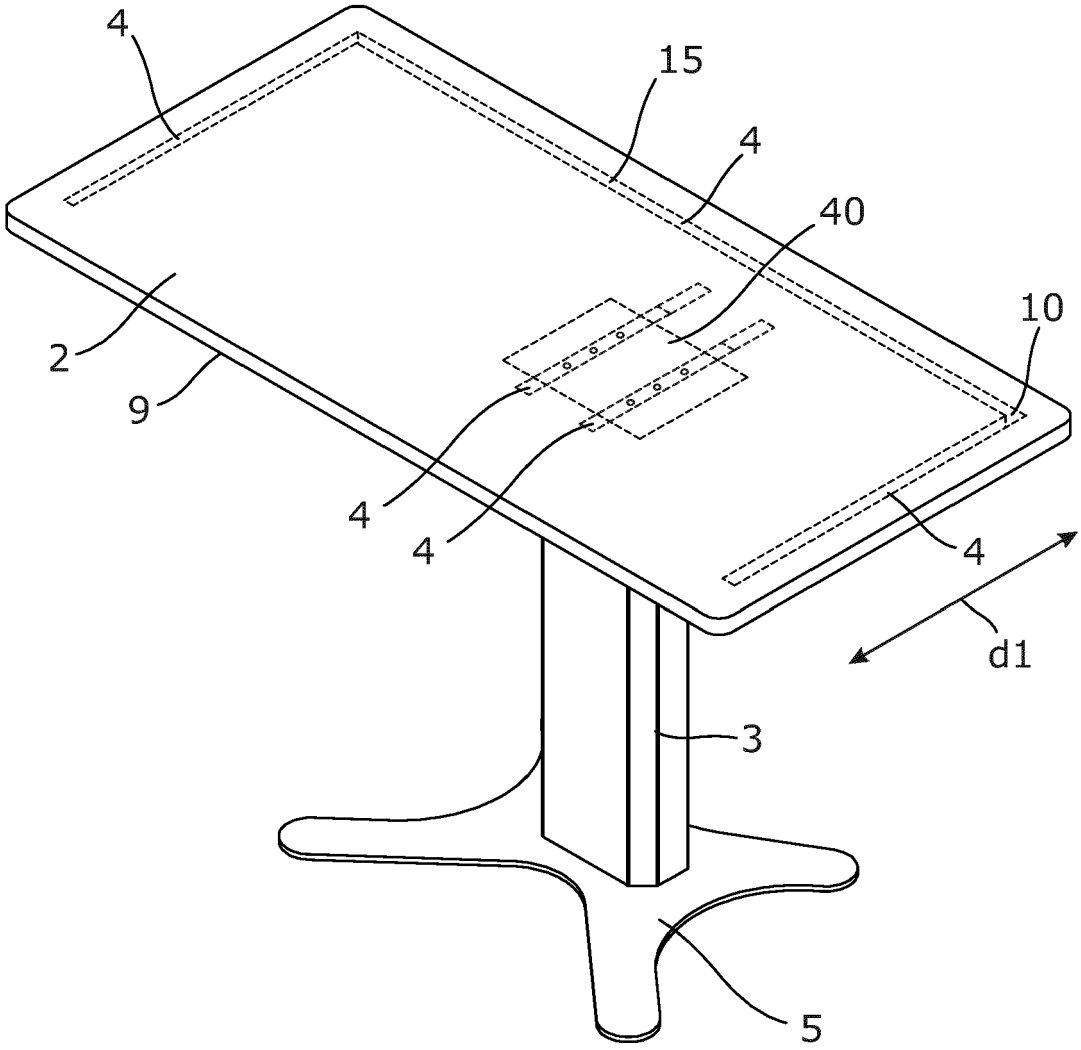

Fig. 8

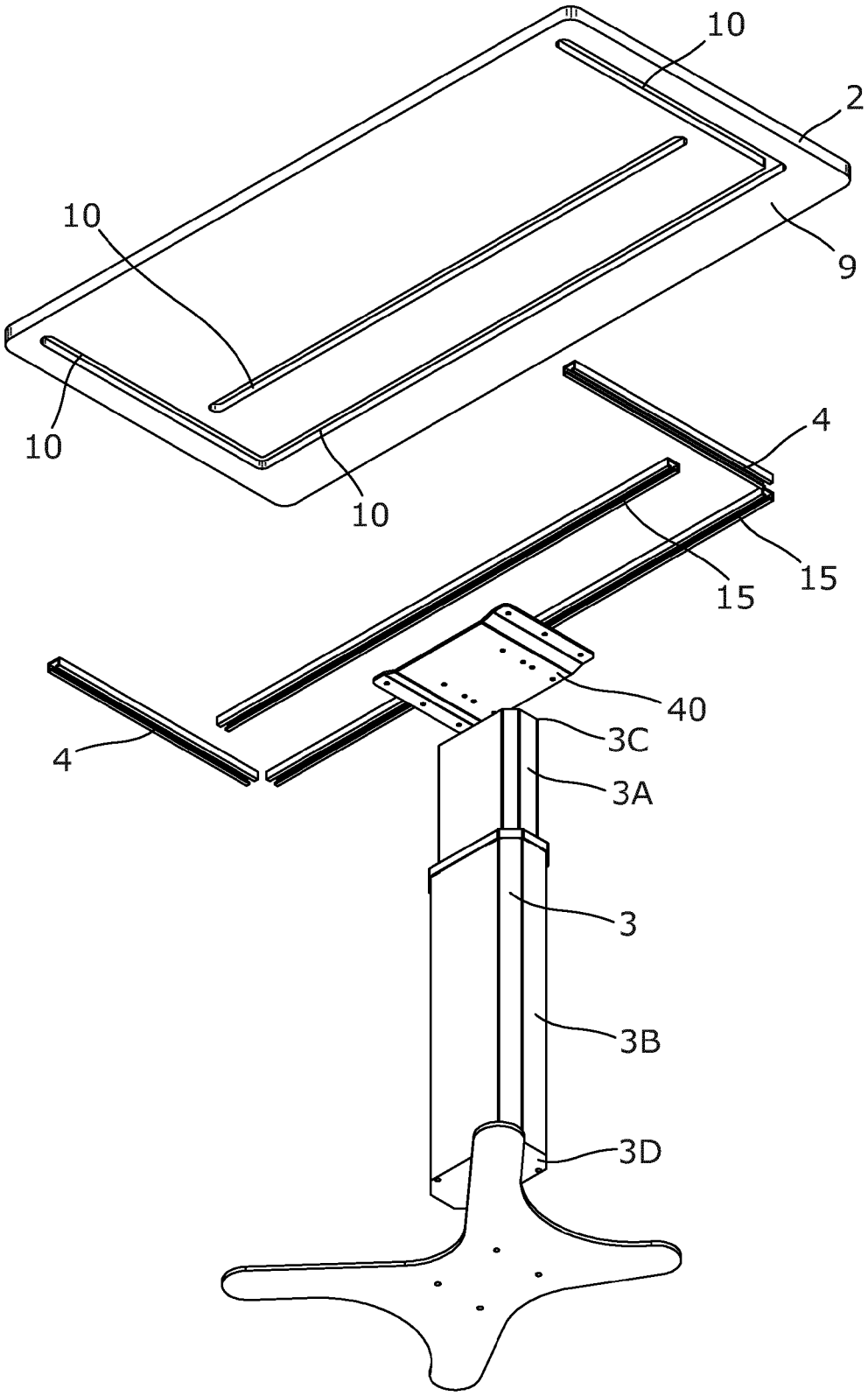

Fig. 9

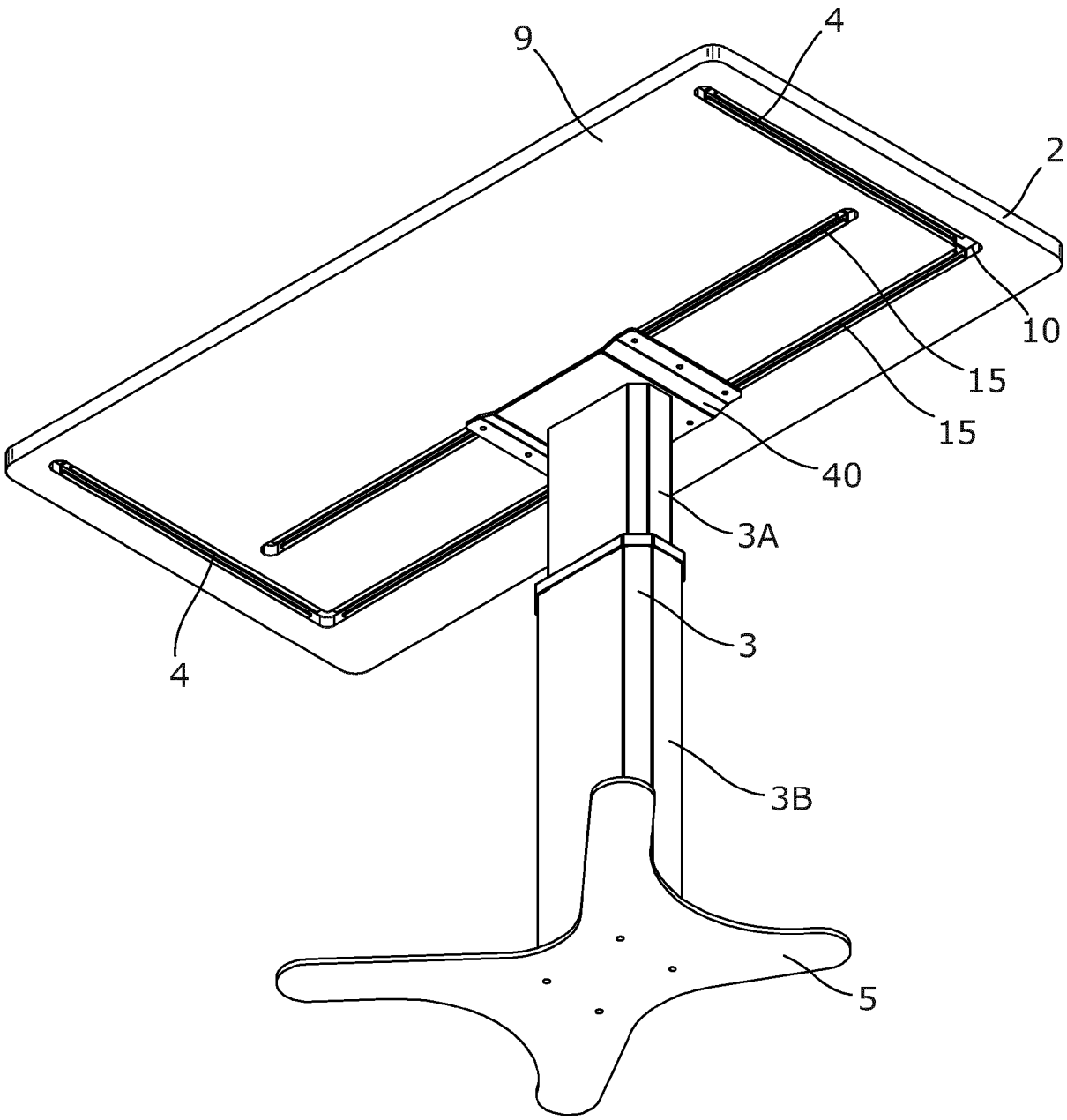

Fig. 10

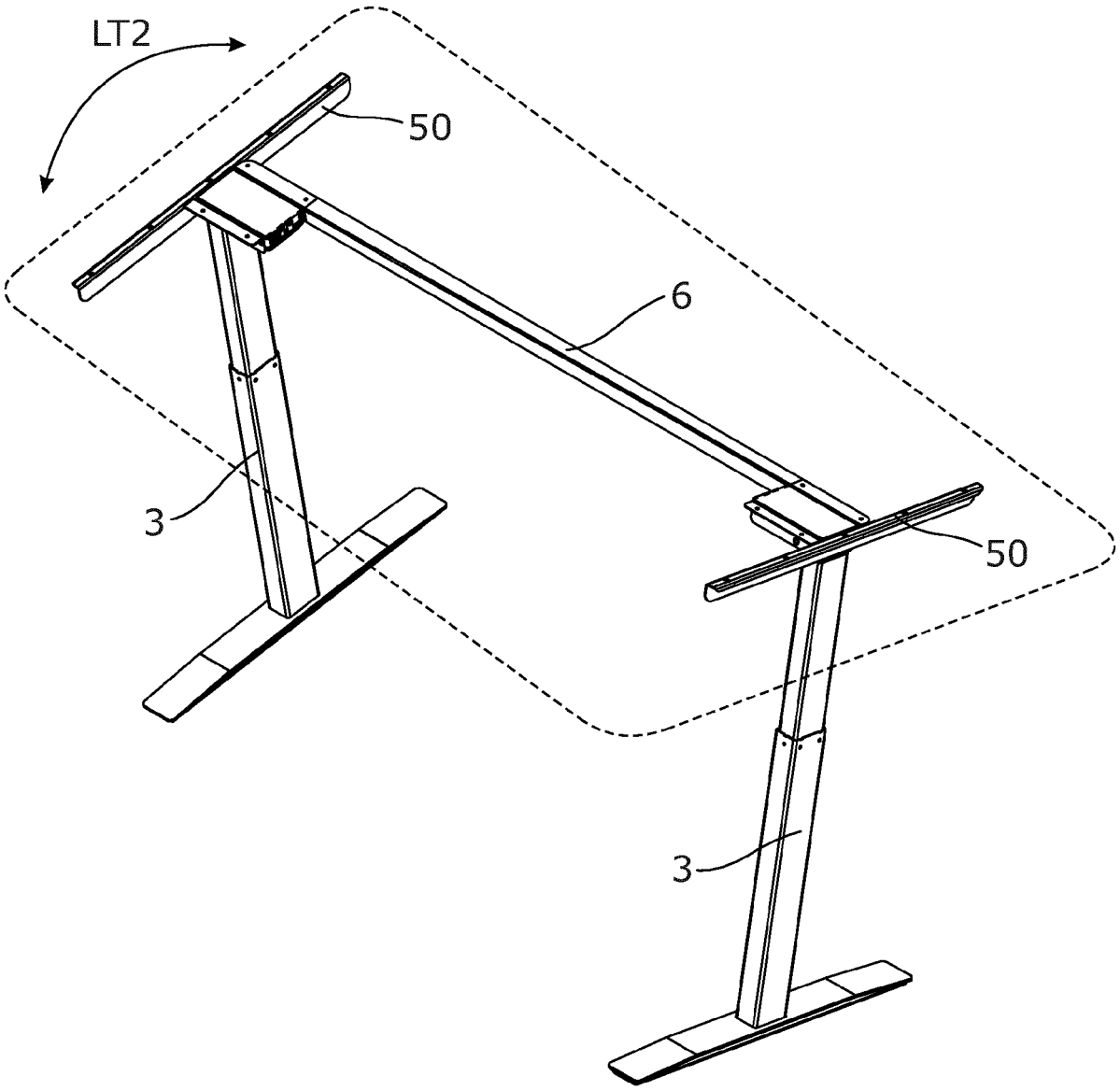

Fig. 11

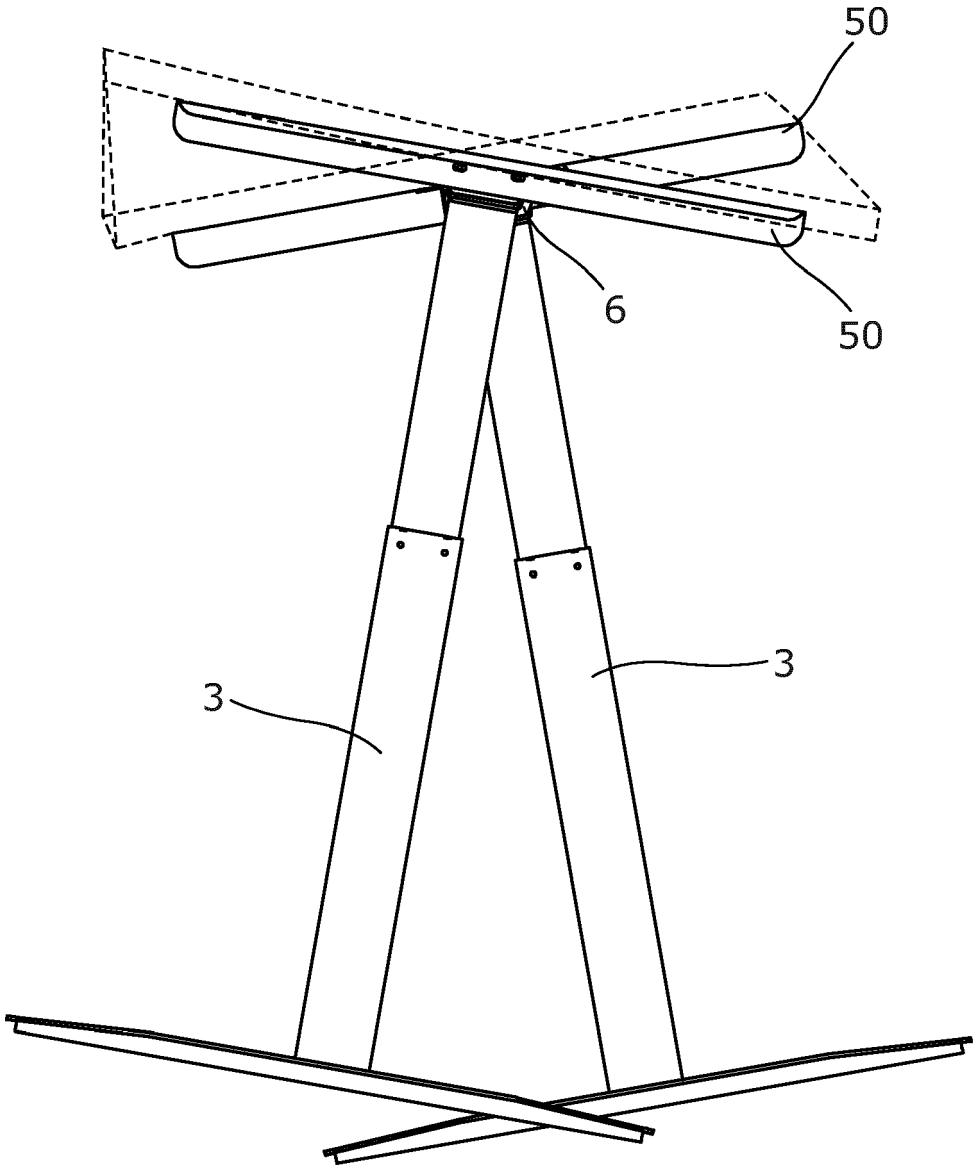

Fig. 12

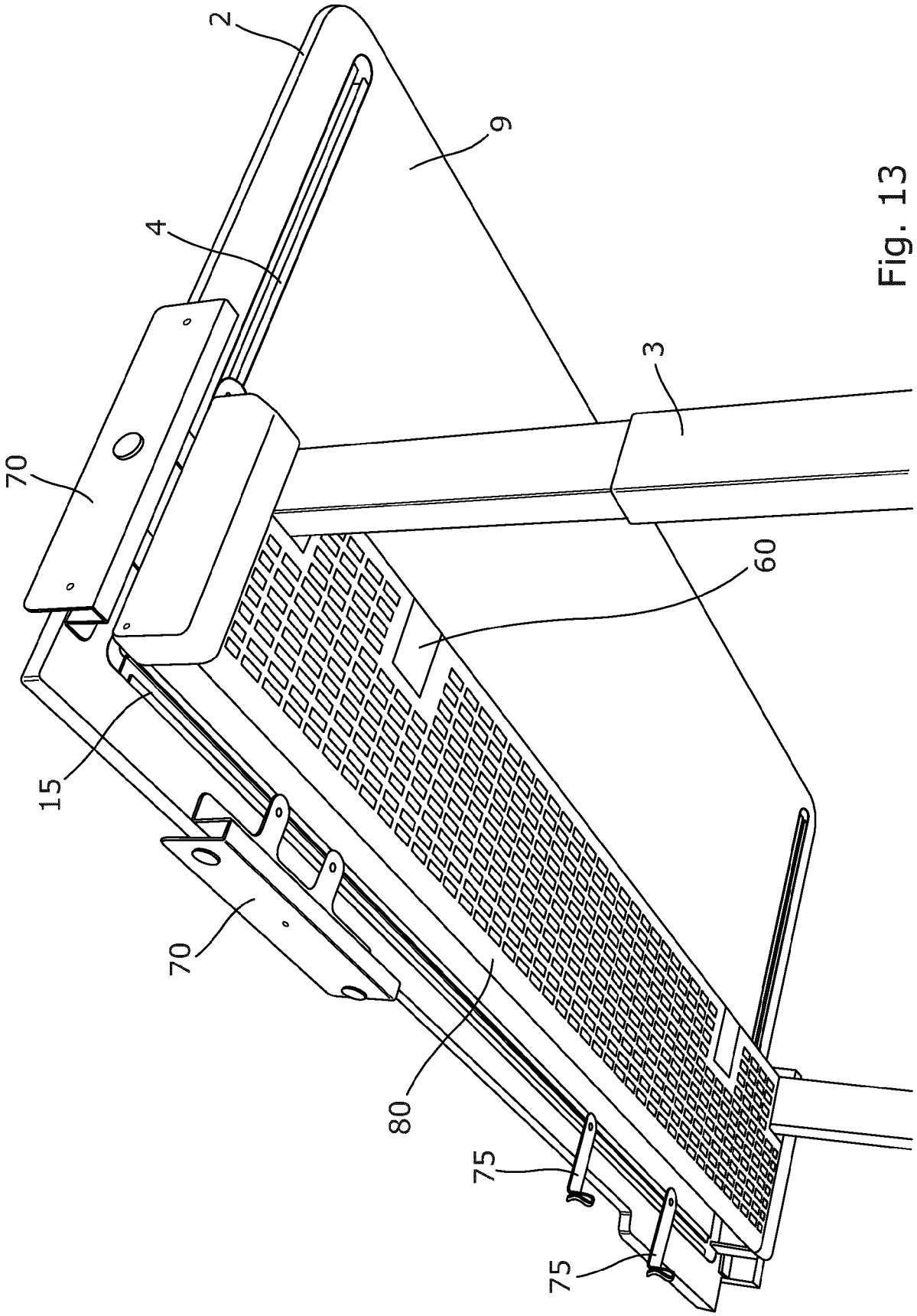

Fig. 13

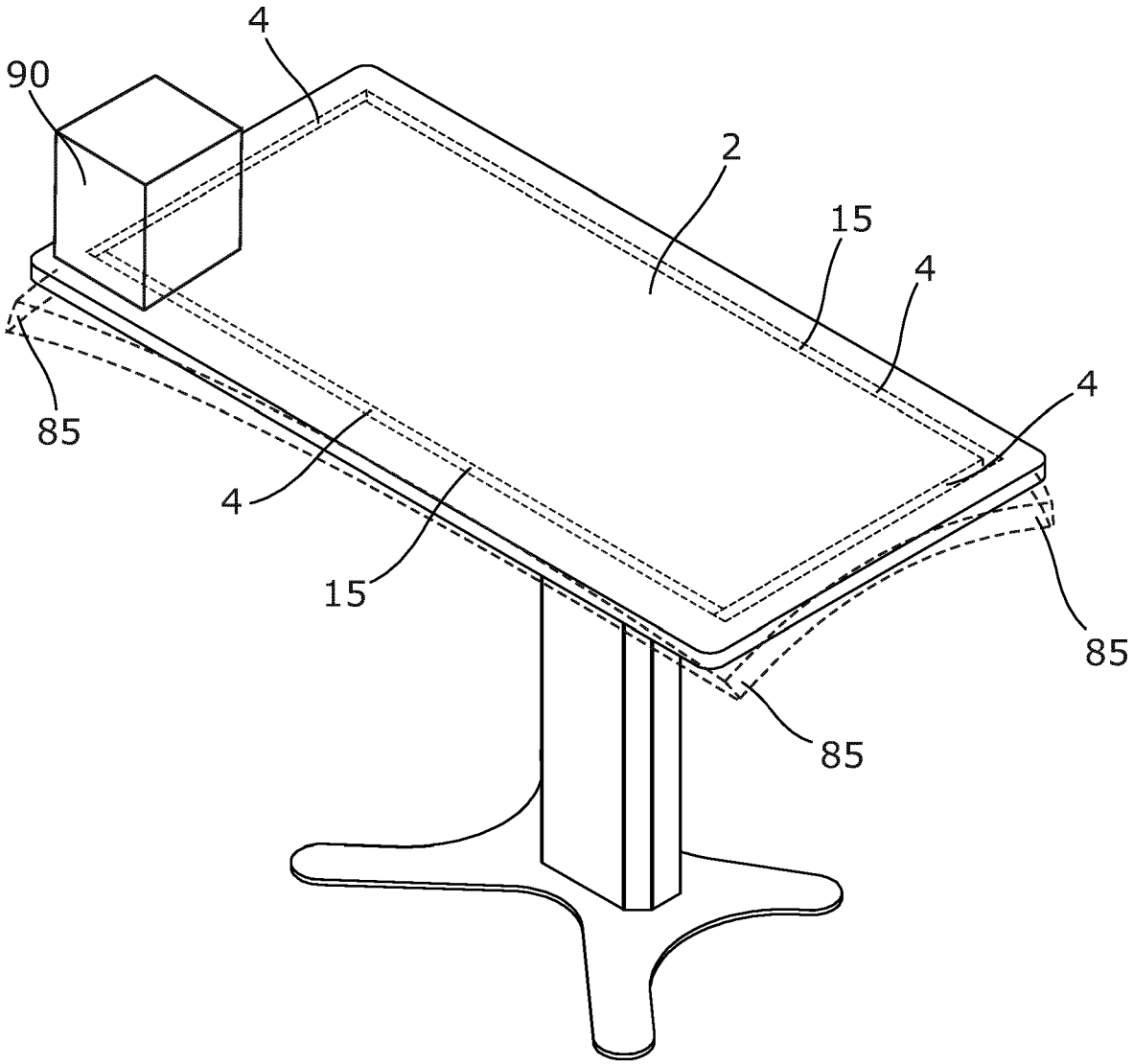

Fig. 14

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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2014/208986 A1 (DESROCHES ET AL) 31 July 2014 (2014-07-31) * figures 11-15 *	1,2,4,15	INV. A47B9/20 A47B13/08
X	WO 95/32644 A1 (SYKES) 7 December 1995 (1995-12-07) * figures 1-19 *	1,2,4-6, 14,15	
X	WO 2006/000164 A1 (LENG LUAHO) 5 January 2006 (2006-01-05) * figures 1-11 *	1-3,6, 9-12	
X	US 8 286 926 B1 (VAN DYNE) 16 October 2012 (2012-10-16) * figures 1-16 *	1-3,5-7, 9-12	

TECHNICAL FIELDS SEARCHED (IPC)

A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	14 November 2016	Linden, Stefan

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14-11-2016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2014208986 A1	31-07-2014	CA 2899233 A1	31-07-2014
		US 2014208986 A1	31-07-2014
		US 2016113389 A1	28-04-2016
		WO 2014113873 A1	31-07-2014
WO 9532644 A1	07-12-1995	AU 697983 B2	22-10-1998
		AU 2520195 A	21-12-1995
		BR 9506056 A	05-08-1997
		EP 0719101 A1	03-07-1996
		WO 9532644 A1	07-12-1995
WO 2006000164 A1	05-01-2006	CN 2741428 Y	23-11-2005
		WO 2006000164 A1	05-01-2006
US 8286926 B1	16-10-2012	US 8286926 B1	16-10-2012
		US 2015108296 A1	23-04-2015
		WO 2013081712 A1	06-06-2013

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