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(54) **Table**

Tisch

Table

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## Description

### TECHNICAL FIELD

[0001] The present invention relates to a table comprising a table top of a predetermined thickness, at least one vertically adjustable leg with a vertical adjustment device and at least one fixing device for fixing the leg to the table top, the fixing device being designed so as to be at least partly recessed from beneath into and secured to the table top.

### BACKGROUND ART

[0002] Vertically adjustable tables are known in numerous different versions. Thus, the number of legs may vary from a single, powerfully dimensioned central column to two or perhaps even four separate legs. Vertical adjustment takes place by means of adjustment devices integrated in the legs which may be operated either manually or electrically.

[0003] In the alternative involving electric operation, the drive motor is integrated in the leg or the legs. Power for the drive motor is taken from the mains via a transformer.

[0004] In the alternative involving a plurality of legs, there are moreover required control electronics which ensure that the drive motors in the different legs cause the legs to "march in step". Electrically operated legs moreover require extensive wiring on the underside of the table, and in addition wiring to the individual legs. This naturally implies that the underside of the table will become cluttered and that there are certain risks that, if a foreign object were to stand under a thus designed table when the table top is lowered so far that the object may come into contact with the wiring or components mounted on the underside of the table and possibly damage them.

[0005] In DE 20 2006 007 300 U1 is disclosed a table having a table top on a number of legs, the table top has an upper panel element and a lower panel element and therebetween a filling material. Each leg has a mounting device with movable clamping jaws to engage in corresponding openings in a fastening unit comprising a fixing element and one intermediate element. The fixing and intermediate elements are screwed together. The fastening unit is countersunk from below into the table top and the upper surface of the fastening unit is glued to the lower surface of the upper panel.

[0006] There is no means for adjusting the height of the table.

[0007] US 6 595 144 B1 describes a table having adjustable height.

[0008] This table has a table top supported on a base having two telescopic legs, the lower legs being interconnected by means of a horizontal beam. Both the upper legs have on top thereof actuating assemblies comprising drive motors for operating a screw jack in each leg. The drive assemblies are mounted on the lower surface

of the table top. Also mounted and extending downwardly the lower surface of the table top are a motor control unit and an operator control.

### PROBLEM STRUCTURE

[0009] The present invention has for its object to improve the table intimated by way of introduction such that the drawback inherent in the prior art technology are obviated. In particular, the present invention has for its object to design the table such that, taking as the point of departure a table top and components mounted thereon, it is possible to optionally retrofit one of several alternative legs. The present invention also has for its object to design the table so that its underside will, as far as possible, be free of wiring and other devices.

### SOLUTION

[0010] The objects forming the basis of the present invention will be attained if the table intimated by way of introduction is characterised in that the drive motor is disposed in the fixing device and that the leg is fixable in the fixing device and its vertical adjustment device connectable to the drive motor.

### BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

[0011] The present invention will now be described in greater detail hereinbelow, with reference to the accompanying Drawings. In the accompanying Drawings;

Fig. 1 is a perspective view from beneath of a part of a table top and a vertically adjustable leg according to the present invention mounted thereon;

Fig. 2 is a view corresponding to that of Fig. 1, but with certain components cut away and presented as an exploded view; and

Fig. 3 shows the device illustrated in Fig. 2 seen obliquely from above.

### DESCRIPTION OF PREFERRED EMBODIMENT

[0012] Referring to the Drawings, in Fig. 1 reference numeral 1 relates to a table top or a part thereof, reference numeral 2 to a vertically adjustable furniture leg and reference numeral 3 to an anchorage for fixing the furniture leg to the table top 1.

[0013] As regards the table top 1, this may be of any optional shape and any optional dimensions apart from in one respect, namely its thickness. Thus, a plurality of different table tops with different surface materials and different designs in other respects, and which thereby may belong to a plurality of different furniture series, may

be used according to the present invention.

**[0014]** One common method of constructing a table top 1 entails that the table top, on its upper side, has an upper surface layer consisting of a panel material and on its underside of a lower surface layer, this also consisting of a panel material such as MDF panel or HDF panel. On the visible sides of the panel material, there is some suitable surface coating such as lacquer or paintwork, foil cladding, veneer or a coating consisting of a suitable high pressure laminate. Between the two surface layers, there is disposed a spacer material which is of low weight and which, for example, may consist of expanded plastic but may also consist of a fluted structure of paperboard or paper. The interconnection of the two surface layers and the spacer material takes place by gluing. Along the periphery of the table top there is an edge bead or strip and possibly inside this a reinforcing framework. Table tops of the type outlined here normally display a thickness of the order of magnitude of 50 mm, but lesser and greater thicknesses may also come into consideration.

**[0015]** According to the present invention, the furniture leg 2 has at least two mutually vertically adjustable sections, a lower section 4 and an upper section 5. How these sections are guided in relation to one another is of no consequence according to the present invention, but one embodiment may be of the type illustrated in the Drawing, where both of the sections 4 and 5 are designed as tubular profiles of square cross section.

**[0016]** Interiorly in the furniture leg 2, there is disposed a vertical adjustment device for adjustment of the relative positions between the two leg sections 4 and 5. This vertical adjustment device may, for example, be designed as a screw device, but may also include wires, chains or similar components. This vertical adjustment device is an integrated part of the furniture leg 2 proper and is fixedly mounted therein.

**[0017]** As is apparent principally from Figs. 2 and 3, the upper section 5 of the furniture leg 2 displays an anchorage in the form of a laterally projecting fixing flange 6. Regardless of how the rest of the furniture leg 2 is constructed and designed, this fixing flange 6 is standardized and thus has the same formation and dimensions on a plurality of different conceivable alternative furniture legs 2.

**[0018]** The vertical adjustment device interiorly disposed in the furniture leg 2 has a drive coupling 7 (see Fig. 3) which, in the embodiment illustrated in the figures, is in the form of a drive shaft displaying, for example, polygonal cross section. The design is such that the drive shaft 7 may, in the axial direction, be inserted in a correspondingly, possibly complementary, designed recess.

**[0019]** For fixing the furniture leg 2 on the table top 1, use is made of a fixing device which, in its entirety, carries reference numeral 8. This fixing device 8 is in the form of a box with an upper wall 9 and a circumferential wall 10. In one practical version, the fixing device may have a square or substantially rectangular design. Along the lower edge of the circumferential wall 10, there is dis-

posed a laterally projecting fixing surface 11 in the form of a projecting flange.

**[0020]** The fixing device 8 is secured in the table top 1 in that it is at least partly countersunk from beneath and up into the material of the table top. In the illustrated embodiment, the dimensioning is made in such a manner that the upper side of the upper wall 9 of the fixing device abuts against the lower side of the upper panel material of the table top and is fixedly glued in position there. Correspondingly, the laterally projecting fixing surface 11 of the fixing device 8 abuts against the underside of the lower panel material of the table top and is fixedly glued thereagainst. The spacer material which was in position in the region of the fixing device has been removed so that the fixing device is countersunk in the table top. As a result of large gluing surfaces, the construction will be extremely strong and rigid and, because of the circumferential wall 10 of the fixing device 8, implies no local weakening of the table top.

**[0021]** Regardless of how the fixing device 8 is recessed in the table top 1, the distance between the upper side of the upper wall 9 and the upper side of the flange 11 is adapted such that gluing in position can take place.

**[0022]** The fixing device 8 is dimensioned and designed in such a manner that there may be disposed therein a drive motor 12 and a reduction gear 13. Both of these components should be considered as components integrated in the fixing device.

**[0023]** In certain cases, depending upon the design of the vertical adjustment device disposed in the furniture leg 2, the reduction gear 13 may possibly be dispensed with.

**[0024]** In the embodiment illustrated on the Drawings, the reduction gear 13 has an output drive coupling 14 for cooperation with the drive coupling 7 of the furniture leg 2. In the illustrated embodiment, the drive coupling is designed as a sleeve which per se may accommodate the shaft-shaped drive coupling 7 on the furniture leg and realise a rotational interconnection between them.

**[0025]** In the illustrated embodiment, the dimensions of the drive motor 12 and the reduction gear 13 are such that the fixing device 8 cannot display fully square configuration, but has an outward bulging 15 which accommodates a certain part of the drive motor 12. The outward bulging 15 also displays the above mentioned circumferential wall 10. Suitably, there may be provided in this outward bulge a cable passage for connection of an electric cable connected to the drive motor 12.

**[0026]** In the transitional region between the circumferential wall 10 of the fixing device 8 and the laterally projecting flange 11, there are provided fixing elements for interconnection with corresponding fixing elements 16 on the furniture leg 2. In one practical version, the fixing device 8 is produced by injection moulding in plastic, die casting in a suitable metal alloy, or by other suitable means. In such embodiments, the fixing elements of the fixing device 8 are formed as threaded bushings for accommodating corresponding screws which extend

through apertures 16 in the fixing flange 6 of the furniture leg 2. In such instance, the positioning and the mutual spacing between the fixing elements of the fixing device 8 and the furniture leg 2 are standardised so that one fixing device 8 can cooperate with any one furniture leg selected from among a plurality of different alternatives and otherwise differently designed furniture legs. The same relationship applies to both of the drive couplings 7 and 14 and their positioning in relation to the fixing elements so that any one optional furniture leg can always be interconnected to a fixing device 8.

[0027] The present invention is not restricted to the above-described table top 1 of lightweight type, but other types of table tops may also be employed. For example, table tops produced from solid wood, laminated board, different forms of panel material such as chipboard, MDF board, HDF board etc.

[0028] On making the recesses in which the fixing device 8 is disposed, the depth of the recess is adapted in such a manner that the upper wall 9 of the fixing device 8 may be glued against a corresponding surface in the bottom of the recess and the projecting flange 11 against the underside of the table top 1 or against the bottom of a recess therein.

[0029] For driving the drive motor 12, use is normally made of a mains-connected transformer. According to the present invention, this transformer is appropriately recessed in from beneath into the material of the table top 1 so that it does not encroach upon the space under the table. The wiring leads to the drive motor 12 are disposed to the fixing device 8, which thereby avoids more or less specifically adapted wiring to the different legs mounted on a table if the drive motor is mounted interiorly therein together with the vertical adjustment device.

[0030] The present invention should not be considered as restricted to that described above and shown on the Drawings, many modifications being conceivable without departing from the scope of the appended Claims.

## Claims

1. A table comprising a table top (1) of a predetermined thickness, with at least one vertically adjustable leg (2) with a vertical adjustment device and at least one fixing device (8) for fixing the leg to the table top, the fixing device (8) being designed so as to be at least partly recessed from beneath into and secured in the table top (1), **characterised in that** a drive motor (12) is disposed in the fixing device (8), and that the leg (2) is fixable in the fixing device and its vertical adjustment device (7, 14) connectable to the drive motor.
2. The table as claimed in Claim 1, where the table top (1) has an upper panel, a lower panel and a spacer material therebetween, **characterised in that** the fixing device (8) has an upper surface (9) which is

disposed to be connected to the upper panel, and an anchorage surface (11) which is disposed at its lower end and is laterally projecting and which is disposed to be interconnected to the lower panel.

3. The table as claimed in Claim 2, **characterised in that** the upper surface (9) of the fixing device (8) as well as the anchorage surface (11) are secured in each respective panel by gluing.
4. The table as claimed in any of Claims 1 to 3, **characterised in that** a reduction gear (13) is disposed in the fixing device (8), that the reduction gear has coupling means (14) and that the leg (2) has a corresponding coupling means (7) for positive interconnection with the coupling means (14) of the reduction gear.
5. The table as claimed in any of Claims 2 to 4, **characterised in that** the distance between the upper surface (9) of the fixing device (8) and the anchorage surface (11) substantially coincides with the thickness of the table top (1).
6. The table as claimed in any of Claims 2 to 5, **characterised in that** the fixing device (8) is in the form of a box with a circumferential wall (10) between the upper surface (9) and the anchorage surface (11), and that there is disposed, in the region of the anchorage surface and the circumferential wall, fixing means for cooperation with corresponding fixing means (16) on the leg.
7. The table as claimed in any of Claims 4 to 6, **characterised in that** the fixing device (8), the drive motor (12) and the gear (13) form an integrated unit.

## Patentansprüche

1. Tisch mit einer Tischplatte (1) einer vorgegebenen Stärke mit mindestens einem vertikal verstellbaren Bein (2) mit einer vertikalen Verstelleinrichtung und mindestens einer Befestigungsvorrichtung (8), um das Bein an der Tischplatte zu befestigen, wobei die Befestigungsvorrichtung (8) so konstruiert ist, dass sie mindestens teilweise von unten in die Tischplatte (1) eingelassen und an der Tischplatte (1) befestigt ist, **dadurch gekennzeichnet, dass** ein Antriebsmotor (12) in der Befestigungsvorrichtung (8) angeordnet ist, und dass das Bein (2) in der Befestigungsvorrichtung (8) befestigt werden kann, und seine vertikale Verstelleinrichtung (7, 14) mit dem Antriebsmotor verbunden werden kann.
2. Tisch nach Anspruch 1, wobei die Tischplatte (1) eine obere Platte, eine untere Platte und ein Distanzstück dazwischen aufweist, **dadurch gekennzeichnet,**

**net, dass** die Befestigungsvorrichtung (8) eine Oberseite (9) besitzt, die derart angeordnet ist, dass sie mit der oberen Platte verbunden werden kann, und eine Verankerungsfläche (11), die an ihrem unteren Ende angeordnet ist und seitlich herausragt, und die derart angeordnet ist, dass sie mit der unteren Platte verbunden werden kann.

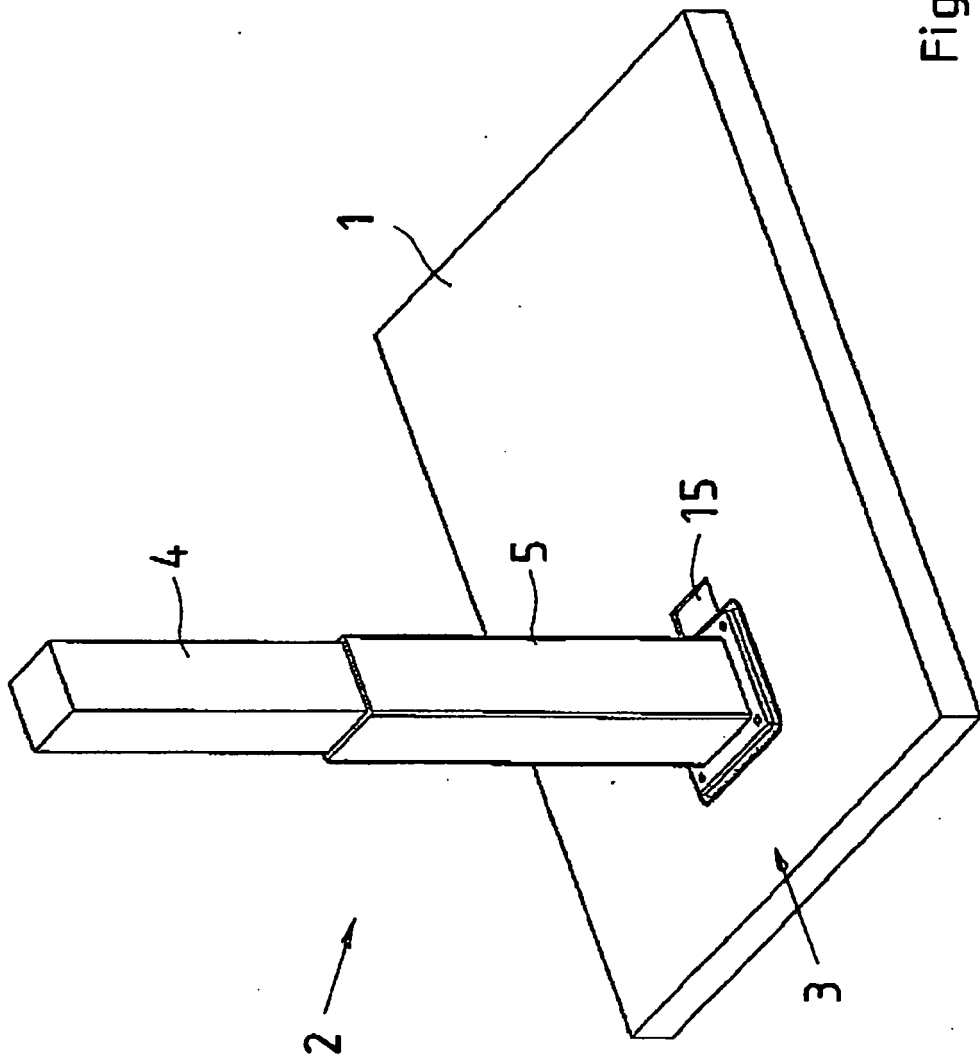
3. Tisch nach Anspruch 2, **dadurch gekennzeichnet, dass** die Oberseite (9) der Befestigungsvorrichtung (8) sowie die Verankerungsfläche (11) in jeder Platte jeweils durch Kleben befestigt sind. 10
4. Tisch nach Anspruch 1 bis 3, **dadurch gekennzeichnet, dass** ein Untersetzungsgetriebe (13) in der Befestigungsvorrichtung (8) angeordnet ist, dass das Untersetzungsgetriebe (13) ein Kopplungselement (14) besitzt, und dass das Bein (2) ein entsprechendes Kopplungselement (14) für die formschlüssige Verbindung mit dem Kopplungselement (14) des Untersetzungsgetriebes besitzt. 20
5. Tisch nach einem der Ansprüche 2 bis 4, **dadurch gekennzeichnet, dass** sich der Abstand zwischen der Oberseite (9) der Befestigungsvorrichtung (8) und der Verankerungsfläche (11) im wesentlichen mit der Stärke der Tischplatte (1) deckt. 25
6. Tisch nach einem der Ansprüche 2 bis 5, **dadurch gekennzeichnet, dass** die Befestigungsvorrichtung (8) die Form eines Kastens mit einer umlaufenden Wand (10) zwischen der Oberseite (9) und der Verankerungsfläche (11) besitzt, und dass in dem Bereich der Verankerungsfläche und der umlaufenden Wand Befestigungselemente angeordnet sind, die mit entsprechenden Befestigungselementen (16) an dem Bein zusammenwirken. 30
7. Tisch nach einem der Ansprüche 4 bis 6, **dadurch gekennzeichnet, dass** die Befestigungsvorrichtung (8), der Antriebsmotor (12) und das Untersetzungsgetriebe (13) eine integrierte Einheit bilden. 40

#### Revendications

1. Table comprenant un plateau (1) d'une épaisseur prédéterminée, avec au moins un pied verticalement ajustable (2) avec un dispositif d'ajustement vertical et au moins un dispositif de fixation (8) permettant de fixer le pied au plateau, le dispositif de fixation (8) étant conçu de façon à être au moins partiellement encastré par le bas à l'intérieur du plateau (1) et fixé dans celui-ci, **caractérisée en ce qu'un** moteur d'entraînement (12) est disposé dans le dispositif de fixation (8) et **en ce que** le pied (2) peut être fixé dans le dispositif de fixation et son dispositif d'ajustement vertical (7, 14) peut être raccordé au moteur 50

d'entraînement.

2. Table selon la revendication 1, dans laquelle le plateau (1) a un panneau supérieur, un panneau inférieur et un matériau d'entretoise entre ces derniers, **caractérisée en ce que** le dispositif de fixation (8) a une surface supérieure (9) qui est disposée pour être raccordée au panneau supérieur, et une surface d'ancrage (11) qui est disposée à son extrémité inférieure et est en saillie latérale et qui est disposée pour être interconnectée au panneau inférieur. 5
3. Table selon la revendication 2, **caractérisée en ce que** la surface supérieure (9) du dispositif de fixation (8) ainsi que la surface d'ancrage (11) sont fixées dans chaque panneau respectif par collage. 10
4. Table selon l'une quelconque des revendications 1 à 3, **caractérisée en ce qu'un** engrenage de réduction (13) est disposé dans le dispositif de fixation (8), **en ce que** l'engrenage de réduction a un moyen de couplage (14) et **en ce que** le pied (2) a un moyen de couplage correspondant (7) pour une interconnexion positive avec le moyen de couplage (14) de l'engrenage de réduction. 20
5. Table selon l'une quelconque des revendications 2 à 4, **caractérisée en ce que** la distance entre la surface supérieure (9) du dispositif de fixation (8) et la surface d'ancrage (11) coïncide sensiblement avec l'épaisseur du plateau (1). 25
6. Table selon l'une quelconque des revendications 2 à 5, **caractérisée en ce que** le dispositif de fixation (8) est sous la forme d'une boîte avec une paroi circconférentielle (10) entre la surface supérieure (9) et la surface d'ancrage (11), et **en ce qu'un** moyen de fixation est disposé dans la région de la surface d'ancrage et de la paroi circconférentielle, permettant une coopération avec le moyen de fixation correspondant (16) sur le pied. 30
7. Table selon l'une quelconque des revendications 4 à 6, **caractérisée en ce que** le dispositif de fixation (8), le moteur d'entraînement (12) et l'engrenage (13) forment une unité intégrée. 35



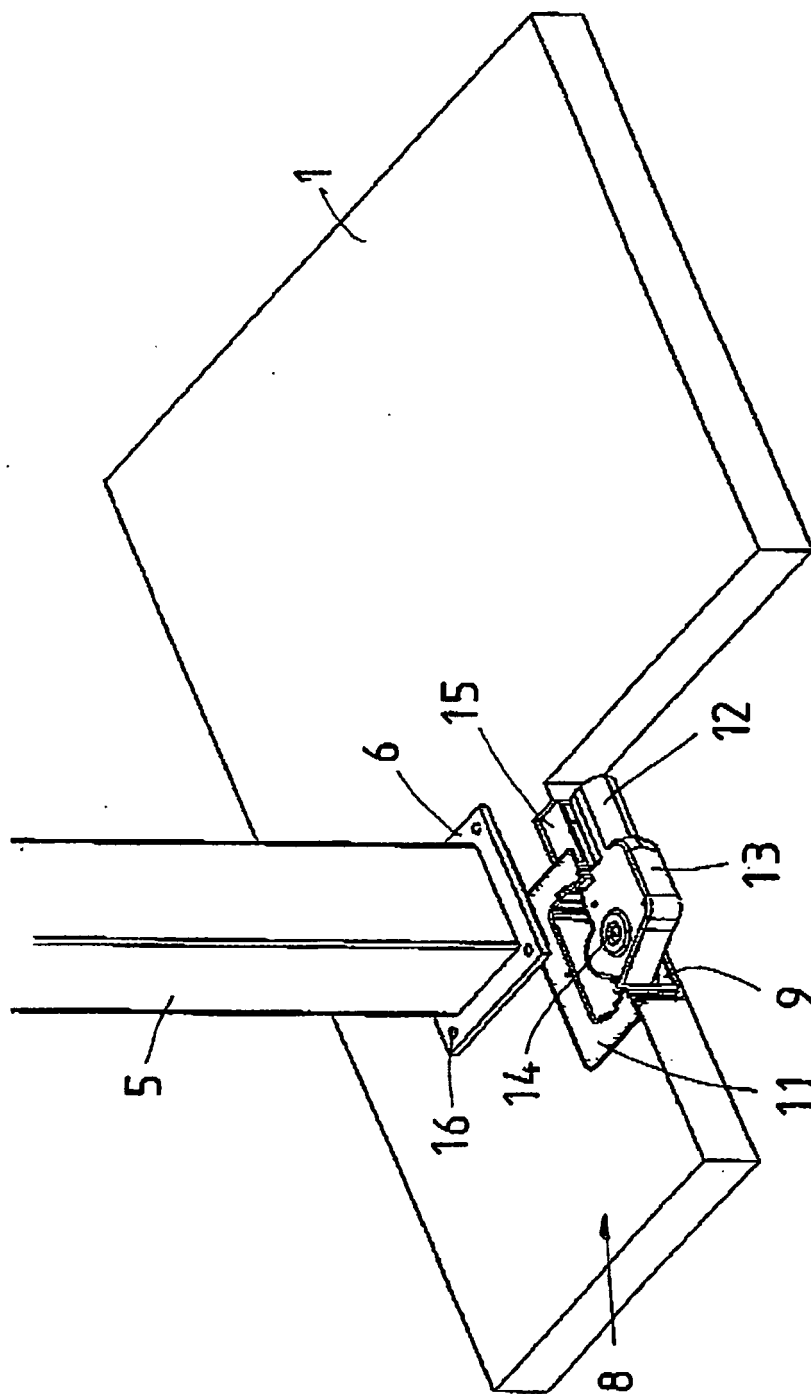


Fig 2

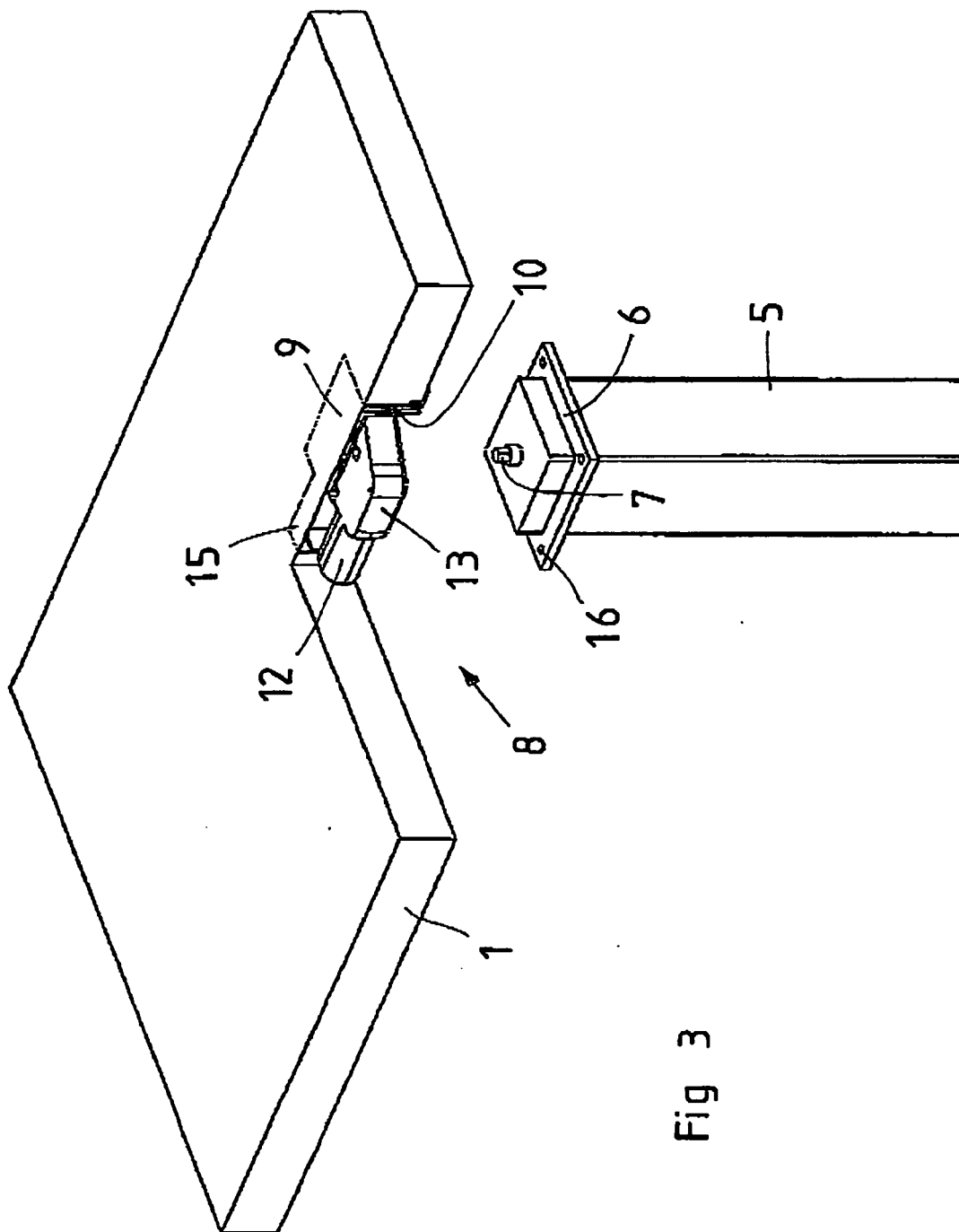


Fig 3

**REFERENCES CITED IN THE DESCRIPTION**

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