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(54) **Vertically adjustable table construction**

Höhenverstellbarer Tisch

Table réglable verticalement

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Description

Field of the Invention

[0001] The technical solution relates to the construction of height adjustable table including a frame with fixed top, while the table legs consist of feet and extensible columns.

State of the Art

[0002] The height-adjustable tables are designed for the purpose of improving comfort at work and reduction of physical strains connected with sedentary work or standing work, with the possibility of setting the most comfortable position of the work desk individually according to the user's needs. The tables may be used in different interior work places, mainly in office work places. The use of height-adjustable table in connection with height-adjustable chair could meet the ergonomic requirements towards a work place with the purpose of backbone load reduction and reduction of possible health damage risk.

[0003] Adjustable tables are construed on the principle of a longitudinal frame, columns and foots. They can be adjusted using tools, hand crank, gas piston and electric motor, which is the order from the less comfortable height adjustment up to the most comfortable one. If there is not a mechanic setting of height, the drive is hidden in the columns of the table.

[0004] In US 2003/0198230 A1 an adjustable shelf enabling both vertical and horizontal adjustment is disclosed. This adjustable shelf comprises two-part telescopic legs as well as shelf portion and the legs extensions moving closer or apart from each other. Leg protrusions are received by the protrusion cavities of the leg extensions which slide against the shelf portion. End covers mountable to the extensions and the shelf portion comprise the supportive surface for storing items.

Summary of the Invention

[0005] The aim of the technical solution is to design the construction of a height-adjustable table with horizontally adjustable frame, allowing smooth adjustment of its height using a drive and its mechanisms, use of the same table construction for several different heights of tables and also easy assembly of the table directly in the place of its use.

[0006] The above mentioned technical problem is solved by a height-adjustable table according to claim 1. So as to arrange positioning of the telescopic frame, it is preferably consisting of a fixed and a movable part, where the fixed part consists of a pair of the first profiles with mirror-type layout in a distance to each other, wherein the first profiles are interconnected by two braces with the electric motor fixed on one of them, while the driving rod passes through the other brace, wherein the movable part consists of a pair of second profiles with mirror-type layout and in a distance to each other copying the shape of the first profiles, wherein in the pair of the first profiles there are created grooves with push-placed connecting elements, which are passing through the holes created in second profiles and then passing through the grooves, wherein they are fixed in cases on one side of the first profiles.

[0007] The main advantage of the height-adjustable table, of which the height is adjustable by an electric motor drive, is the possibility of dynamic change of the table height as needed, thanks to columns consisting of profiles of identical shape which can be inserted into each other with mechanic drives inside.

[0008] Another advantage is the telescopic frame that allows, using the profiled sheets fitting into each other and arranging horizontal movement, the construction of the table to be used for several pre-set or arbitrary widths of the table within specified range.

[0009] It is advantageous that this construction allows partial pre-assembly of the table and also the packaging in a single package including its other parts, so as the unpacking and following installation of the table would be easy and fast for the end user and the occurrence of possible faults during assembly, which could cause any permanent damage to the table construction, would be minimised. Thus are both of the columns fixed on the correct sides of the frame so as to avoid their confusion, the table frame is already equipped with the motor so as to avoid its incorrect fixation, and the main driving rod is inserted in the case on the frame so as to avoid confusion with any other driving rod contained in the package. The remaining procedure for the table construction is explained in detail in assembly instructions enclosed in each table package.

[0010] Another advantage is the variability of the table construction. The table can be manufactured in various shapes and dimension variants. Columns may be of square, rectangular, or round profiles, table frames and feet may be of profiled sheets, closed profiles, or they may be a combination of both in relevant lengths. The table drive may be arranged by more than one motor and the table construction may be solved by one as well as by more than two columns of different lengths of height adjustability.

Brief Description of the Drawings

[0011] The technical solution will be explained in drawings, where Fig. 1 shows a view of one embodiment of the height-adjustable table set in axonometric view, Fig. 2 shows a detail of driving rod connection to the gear box placed inside of the column, and Fig. 3 shows a detail of the extensible frame layout.

Description of the Referred Embodiments

[0012] The new construction of the height-adjustable

table will be explained using an exemplary embodiment, described in the following text.

[0013] The exemplary realisation according to Fig. 1 and Fig. 2 shows the height-adjustable table consisting of an assembled steel structure consisting of an extensible frame **9**, extensible columns **1**, foots **3** and outrigger **2**, which are interconnected according to a known methods. The columns **1** together with feet **3** at the bottom and outrigger **2** at the top constitute the table legs, interconnecting the telescopic frame **9**, consisting of a set of profiled sheets interconnected by fixation means **10.** The telescopic frame **9** is shown in Fig. 3. The extensible frame **9** consists of the fixed part **13** and the movable part **14**. The fixed part **13** of the extensible frame **9** consists of a pair of the first profiles **15,** with mirror-type layout and in a distance to each other. The first profiles **15** are interconnected by two braces **16**, with the electro motor **4** fixed on one of them, while the other brace **16** serves for leading the driving rod **5** to the gearbox placed in the table leg. The movable part **14** also consists of a pair of second profiles **17**, with mirror-type layout and in a distance to each other, copying the shape of the first profiles **15** of the fixed part **13** of the extensible frame **9**. In the pair of first profiles **15** of the fixed part **13** of the extensible frame **9** there are made grooves **18** on both sides, serving together with plastic cases **19** (adaptors) for leading the second profiles **17** of the movable part **14** of the extensible frame **9** during drawing out. Both of the parts of the extensible frame **9** are interconnected through plastic cases **19** and holes in second profiles **17** of the movable part **14** of the extensible frame **9**, using connecting elements **20**. The connecting elements **20** simultaneously serve as arresting screws and after extension of the movable part **14** of the extensible frame **9** to the required dimension they arrest both of the parts of the extensible frame **9.** As an aid for adjusting the correct width of the table are used the triangular cuts **21** made on the first profiles **15** of the fixed part **13** of the extensible frame **9**, thanks to them it is easy to set the four pre-adjusted widths of the table. The connection of the table legs with the telescopic frame **9** is performed using the flanges **12** fixed on columns **1** and it provides the complete table structure with stability. The foots **3** serve as a fixed base of the table, on which are mounted extensible columns **1** with mechanic drive, which arranges vertical movement of the table together with driving rods **5** fixed, according to the known method, on gears **11** placed in columns **1** of the table. In the upper part of the column **1** is fixed the outrigger **2**, which together with the telescopic frame **9** allows the fixation of the work desk **6**. The frame **9** is constructed in a way so as to arrange horizontal extension of the whole structure within given range and moreover, it serves as a cover and lead of driving rods **5** to mechanic drives in columns **1**.

[0014] The table assembly is performed as follows. Just tip out the columns **1** from the telescopic frame **9** to 90°, adjust the table length dynamically by pulling, screw the feet **3**, insert the corresponding driving rod **5** from the side, fix the outrigger **2** and finally assemble the work desk **6** together with control unit **7** and controller **8**. The columns **1**, outrigger **2** and feet **3** are fixed during the table assembly using enclosed means **10** for fixating, for example screws, and the telescopic frame **9** is secured by tightening the screws placed in the holes directly on the telescopic frame **9**.

[0015] The table height can be adjusted within the given range by using a drive provided by the electric motor **4**, which is preferably placed on the left side of the table. Then, the movement from the electric motor **4** is transferred by hexagonal driving rods **5** to gear boxes **11** located in the columns **1** of the table. The adjustability control is placed on the bottom of the work desk **6** and it is performed by the controller **8** equipped with two directional push buttons. By pressing the dimensional push button with up-arrow, the table moves upwards, by pressing the dimensional push button with down-arrow, the table moves downwards. When releasing the push button, the table stops in required position.

Industrial Applicability

[0016] The height-adjustable table can be advantageously used anywhere the simple assembly of table is needed and its consequent variability is usable.

List of relation marks

[0017]

1	columns
2	outrigger
3	feet
4	electric motor
5	driving rod
6	work desk
7	control unit
8	controller (control push buttons)
9	frame
10	fixation means (screws)
11	gearboxes
12	column flange
13	fixed part of the frame
14	movable part of the frame
15	first profiles of the fixed frame
16	braces of the fixed frame
17	second profiles of the fixed frame
18	grooves of the fixed frame
19	plastic cases (adapters)
20	connecting elements
21	triangular cuts of the movable frame

Claims

1. Height-adjustable table, comprising a frame (**9**) with fixed work desk (**6**), table legs consisting of feet (**3**)

with extensible columns (1) with mechanic drive and outriggers (2), the table legs connected with the frame (**9**) using flanges (**12**) fixed on the extensible columns (**1**), wherein the frame (**9**) is telescopic and the outriggers (**2**) are connected via fixation outriggers (**2**) tools (**10**) with the work desk (6), **characterised by** the outriggers (**2**) being fixed in the upper part of the extensible columns (1) allowing together with the telescopic frame (9) the fixation of the work desk (6).

2. Height-adjustable table according to the claim 1, **characterised in that** the telescopic frame (**9**) consists of a fixed part (**13**) and a movable part (**14**), where the fixed part (**13**) consists of a pair of first profiles (**15**), in mirror-type layout and in a distance from each other, wherein the first profiles (**15**) are interconnected by two braces (**16**), the electric motor (**4**) being fixed on one of them, while a driving rod (**5**) passes through the other brace (**16**), wherein the movable part (**14**) consists of a pair of second profiles (**17**), in mirror-type layout and in a distance from each other, copying the shape of the first profiles (**15**), wherein in the pair of the first profiles (**15**) there are created grooves (**18**) with push-placed connecting elements (**20**), which are passing through holes created in second profiles (**17**) and then passing through the grooves (**18**), wherein they are fixed in cases (**19**) on one side of the first profiles (**15**).

Patentansprüche

1. Höhenverstellbarer Tisch, umfassend einen Rahmen (**9**) mit einem festen Schreibpult (**6**), wobei Tischbeine aus Füßen (**3**) mit sich erstreckenden, mechanisch getriebenen Säulen (1) und Auslegern (**2**) bestehen, wobei die Tischbeine mit dem Rahmen (**9**) mithilfe der an den sich erstreckenden Säulen (**1**) angebrachten Flansche (**12**) verbunden sind, wobei der Rahmen (**9**) teleskopisch ist und die Ausleger (**2**) mit dem Schreibpult (**6**) mithilfe Befestigungsmittel (**10**) verbunden sind, **dadurch gekennzeichnet, dass** die Ausleger (**2**) an dem Oberteil der sich erstreckenden Säule (1) befestigt sind, was die Befestigung des Schreibpultes (**6**) zusammen mit dem teleskopischen Rahmen (**9**) ermöglicht.

2. Höhenverstellbarer Tisch gemäß Anspruch 1, **dadurch gekennzeichnet, dass** der teleskopische Rahmen (**9**) aus einem festen Teil (**13**) und einem beweglichen Teil (**14**) besteht, wobei der feste Teil (**13**) aus einem Paar von ersten Profilen (**15**) besteht, in spiegelbildlicher Anordnung und in einem Abstand voneinander, wobei die ersten Profile (**15**) mithilfe zwei Streben (**16**) miteinander verbunden sind, ein Elektromotor (**4**) an einer davon befestigt ist, während ein Antriebstab (**5**) durch die zweite Strebe (**16**) hindurchgeht, wobei der bewegliche Teil (**14**) aus einem Paar von zweiten Profilen (**17**) besteht, in spiegelbildlicher Anordnung und in einem Abstand voneinander, die die Form von den ersten Profilen (**15**) kopieren, wobei es in dem Paar von den ersten Profilen (**15**) Rillen (**18**) mit verschiebbar angeordneten Verbindungselementen (**20**) bestehen, die durch in den zweiten Profilen (**17**) ausgebauten Löcher hindurchgehen und dann durch Rillen (**18**) hindurchgehen, wobei sie in Hülsen (**19**) auf einer Seite der ersten Profilen (**15**) befestigt sind.

Revendications

1. Table réglable en hauteur, comprenant un cadre (**9**) avec un bureau (**6**) de travail fixe, les pieds de table étant constitués de pieds (3) avec des colonnes (**1**) extensibles en transmission mécanique et de longerons (**2**), les pieds de table étant reliés au cadre (**9**) au moyen de brides (**12**) fixées aux colonnes (**1**) extensibles, où le cadre (**9**) est téléscopique et les longerons (**2**) sont reliés par des outils (**10**) de fixation au bureau (**6**) de travail, **caracterisée en ce que** les longerons (**2**) sont fixés dans la partie superieur des colonnes (**1**) extensibles, permettant ensemble avec le cadre (**9**) téléscopique la fixation du bureau (**6**) de travail.

2. Table réglable en hauteur selon la revendication 1, **caracterisée en ce que** le cadre (**9**) téléscopique est constitué d'une partie (**13**) fixe et d'une partie (**14**) mobile, où la partie (**13**) fixe est constituée d'une paire de premiers profils (**15**), dans une disposition de type mirroir et à distance l'un de l'autre, où les premiers profils (**15**) sont interconnectés par deux entretoises (**16**), un moteur (**4**) électrique étant fixé sur l'une d'elles, tandis que une tige (**5**) d'entraînement traverse l'autre entretoise (**16**), où la partie (**14**) mobile est constituée d'une paire de seconds profils (**17**), dans une disposition de type mirroir et à distance l'un de l'autre, en copiant la forme des premiers profils (**15**), où dans la paire des premiers profils (**15**) se forment des rainures (**18**) avec des éléments (**20**) de liason arrangés à coulisse qui traversent les trous créés dans les seconds profils (**17**) et puis traversent les rainures (**18**), où ils sont fixés dans des étuis (**19**) d'un côté des premiers profils (**15**).

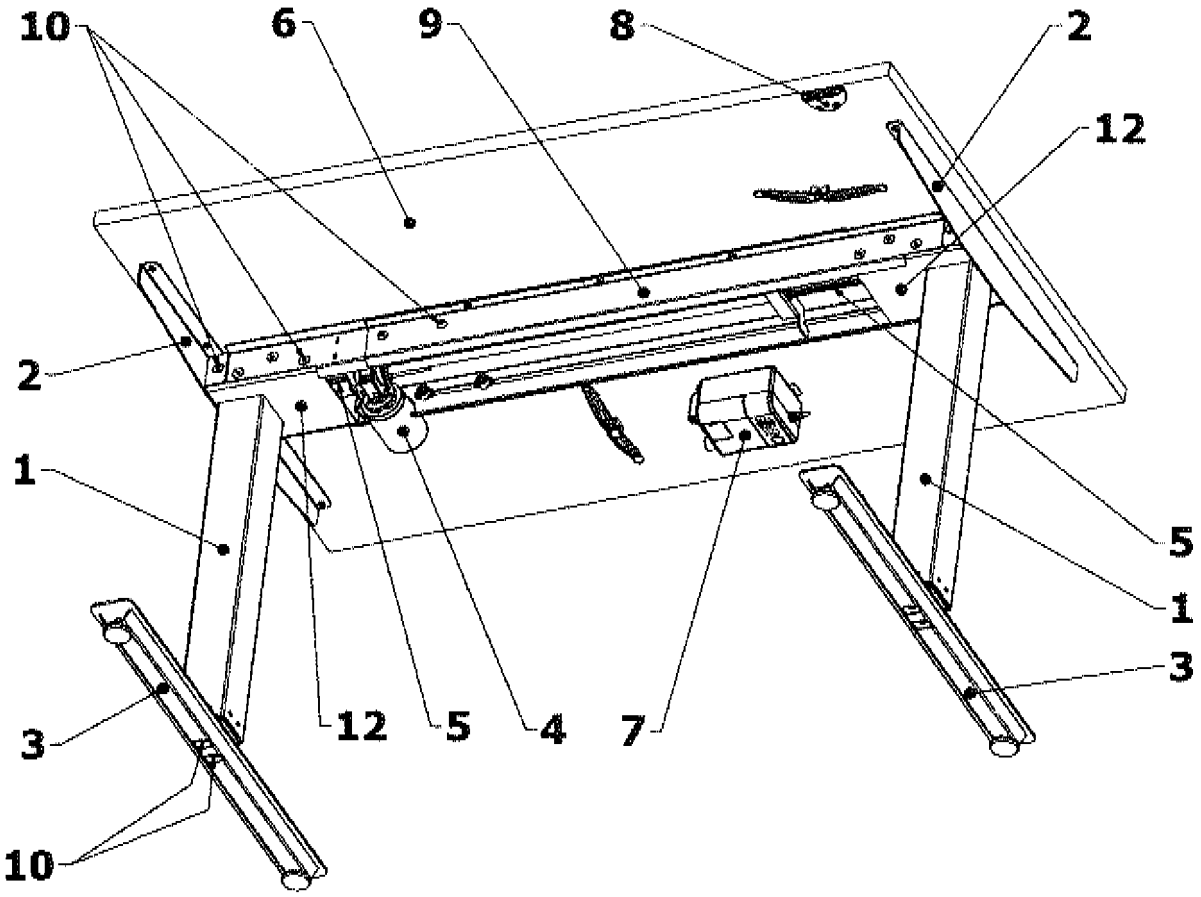


Fig. 1

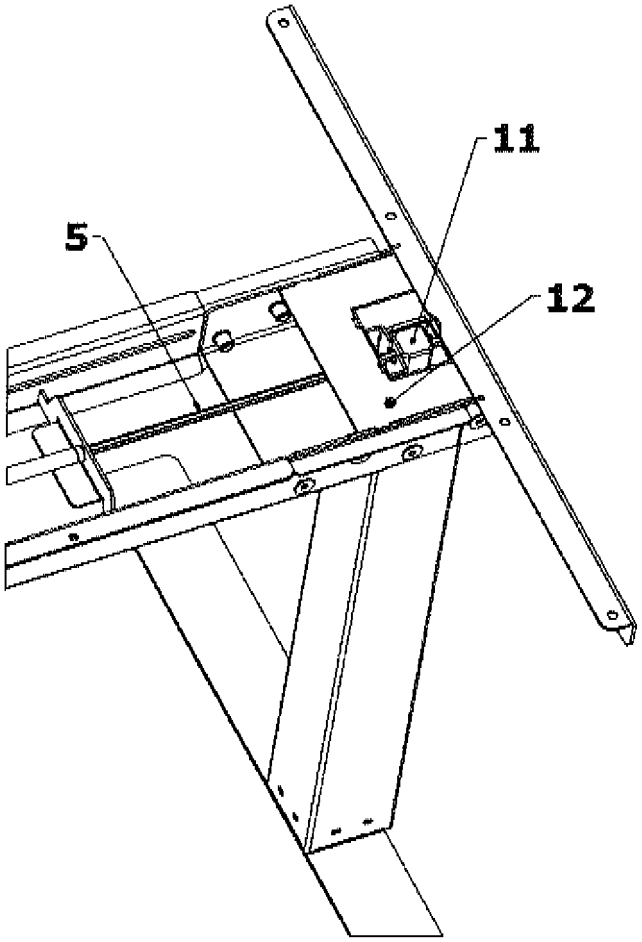


Fig. 2

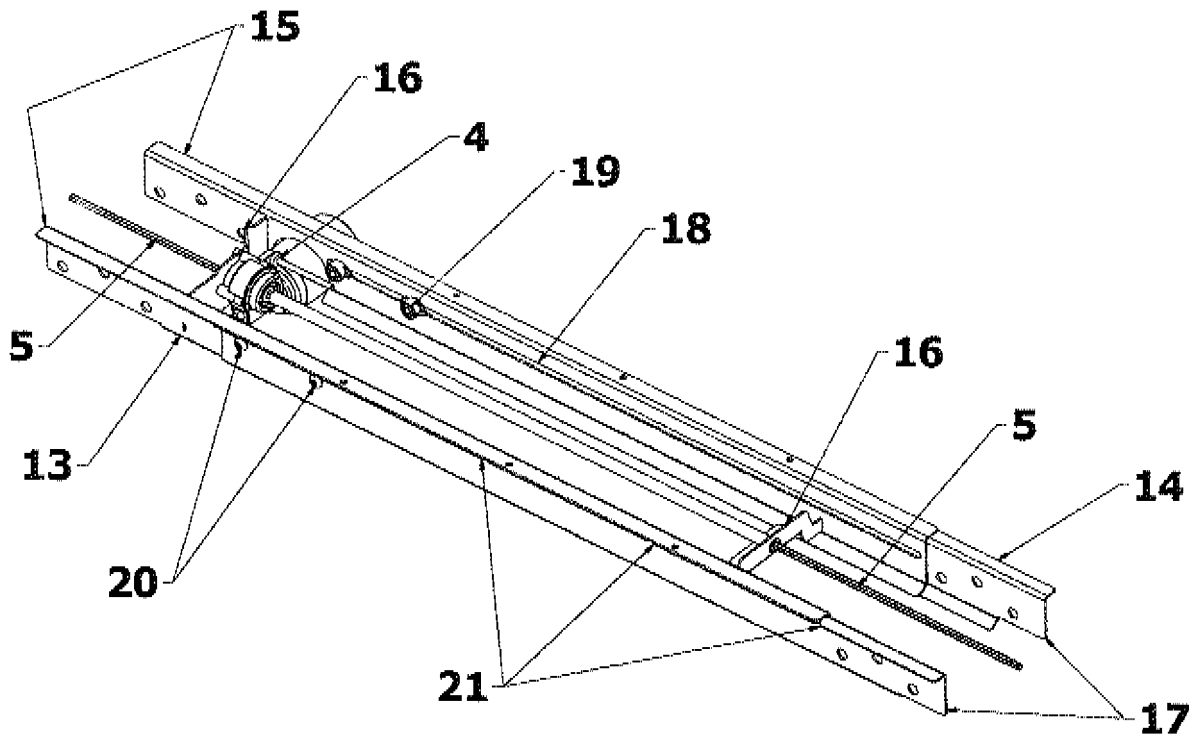


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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