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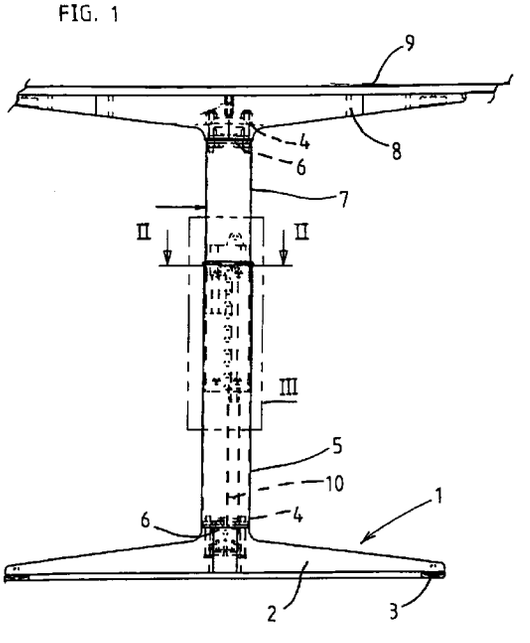
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(54) Legs adjustable in height for supporting a table top, desk top or work top.

(57) Legs (1) adjustable in height for supporting a table top, desk top or work top (9), each leg (1) being provided with an assembly of screw shaft (12) and nut (11), situated in hollow columns (5, 7) slidable relative to each other in such a way, that on rotation of the screw shaft (12) the columns are moved relative to each other. An electric motor (14) driving the screw shaft (12) through the transmission is incorporated in the column (7). The motors (14) of the legs (1) are electronically coupled and there are electronic means (15) for counting the number of rotations performed by each of the screw shafts (12) and for mutually comparing the numbers of rotations. The electronic means provide for adjustment of the speeds of the motors (14) in such a way that the number of rotations of each of the screw shafts (12) is substantially equal.

FIG. 1



EP 0 882 415 A1

Description

The invention relates to legs adjustable in height for supporting table tops, desk tops or work tops being supported by at least two of such legs, each leg being provided with an assembly of screw shaft and nut, said shaft extending substantially in longitudinal direction of said leg, the screw shaft and nut being coupled to portions of the legs slidable relative to each other, or to a portion of said leg and the top supported by it, in such a way that on rotating the screw shaft, the leg portions can be moved relative to each other.

Such desk and work tops are applied on an increasingly large scale since it is desirable that a person working at a desk or the like assumes a proper sitting position. A wrong position may cause physical complaints. Furthermore, in modern offices a desk is used by various persons, so that a desk can not be adjusted to one specific person.

If with the well-known constructions, the top is supported by at least two legs, it is desirable that there is a coupling between the adjusting mechanisms of both legs. Then it can be provided for that the top remains in its horizon-tale position while adjusting it. Mostly this is realized by mechanical transmissions through rotary shafts. However, such a coupling takes up a certain amount of space. This can be disturbing for e.g. legroom and cabinet space and therefore the well-known supporting structures do not have an attractive appearance and defects may arise when the height adjustment of the legs does not take place synchronously. This may occur e.g. by the fact that one leg experiences a greater load than the other, since the supported top locally holds more apparatus.

The object of the invention is to remove these difficulties and to that end provides for that each leg comprises a hollow column incorporating an electric motor extending substantially in longitudinal direction, said electric motor driving a screw shaft in longitudinal direction within the column by means of a transmission, the motors of the legs being electronically coupled and electronic means being present for counting the number of rotations each of the screw shafts performs per unit of time and for mutually comparing the numbers of rotations of the screw shafts, the electronic means providing for relative adjustment of the speeds of the motors, in such a way that the number of rotations performed by each of the screw shafts per unit of time is substantially equal.

This electronic coupling also achieves that the legs can be arranged at any desired position, which offers a large degree of freedom in the configuration to be realized.

It has turned out that motors of relatively small dimensions suffice, so that, together with the screw shafts, they can be accomodated in legs of small dimensions.

In particular it is provided for, that the number of rotations per unit of time of the screw shafts in the leg or legs is kept equal to the number of rotations of the screw shaft performing the smallest number of rotations.

With the help of the electronic means the height of the top in a certain moment can be indicated on a display. When the desk or the like is used by various persons, the user can adjust the top directly to the desired height.

The invention is further explained by way of an embodiment, shown in the drawing, in which:

Fig. 1 shows a view of a leg according to the present invention;
Fig. 2 shows a horizontal section, on an enlarged scale, along the line II-II of Fig. 1; and
Fig. 3 shows a vertical section, on an enlarged scale, across a portion of said leg, situated within the line III of Fig. 1.

The leg 1 illustrated in the drawing consists of a horizontally positioned transverse beam 2 being provided with supports 3 by which it can bear on the ground. The beam 2 is connected to a baseplate 6 mounted in the lower end of a hollow column 5 by means of bolts 4. A column 7 is telescopically slidable in the column 5. By means of bolts 4 and a baseplate 6 the column 7 is connected to an uppermost transverse beam 8 on which a table top 9 can be mounted, which is also supported by a corresponding leg 1 not illustrated. Possibly, parts of the legs can be connected for obtaining a greater stiffness of the whole.

Within the column 5, a pipe 10 being provided with a nut 11 at its upper end is mounted on the baseplate 6. A screw shaft 12 extends through the nut 11 and can be driven, through a reduction gear unit 13, by an electric motor 14 fixedly mounted in the column 7.

In the Figs. 1 and 3, the screw shaft 12 and thus the table top 9, is in its uppermost position. When the current to the motor 14 is switched on, the screw shaft 12 will be rotated and will start moving downwards, owing to the presence of the nut 11, together with the column 7 and the top 9. At the same time, the current to the motor 14 of the other leg 1 is switched on as well, so that both columns 7, on which the top 9 bears, start moving downwards.

Within the column 7 there are electronic means 15 for recording the number of rotations performed by a screw shaft 12. The signal provided by said means 15 is supplied to further electronic means not indicated, intended for driving the motor 14 in the other column 7 at such a speed that the screw shaft 12 rotated by it performs the same number of rotations as the screw shaft in the first-mentioned column.

It will be obvious, that only one possible embodiment of a leg according to the invention has been illustrated in the drawings and described above and that many changes can be made without leaving the inventive idea, as it is indicated in the accompanying claims.

Claims

1. Legs (1) adjustable in height for supporting a table top, desk top or work top (9) being supported by at least two of such legs, each leg (1) being provided with an assembly of screw shaft (12) and nut (11), said shaft extending substantially in longitudinal direction of said leg (1), the screw shaft (12) and nut (11) being coupled to portions (5, 7) of the legs (1) which are slidable relative to each other, or to a portion of said leg (1) and the top (9) supported by it, in such a way that on rotating the screw shaft (12), the leg portions can be moved relative to each other, characterized in that each leg (1) comprises a hollow column (5, 7) incorporating an electric motor (14) extending substantially in longitudinal direction, said electric motor driving a screw shaft (12) in longitudinal direction within the column (5, 7) by means of a transmission, the motors (14) of the legs (1) being electronically coupled and electronic means (15) being present for counting the number of rotations performed by each of the screw shafts (12) per unit of time and for mutually comparing the numbers of rotations of the screw shafts (12), the electronic means providing for relative adjustment of the speeds of the motors (14), in such a way that the number of rotations performed by each of the screw shafts (12) per unit of time is substantially equal.

2. Leg according to claim 1, characterized in that the number of rotations per unit of time of the screw shaft (12) in the leg or legs (1) is kept equal to the number of rotations of the screw shaft (12) performing the smallest number of rotations.

3. Leg according to claim 1 or 2, characterized in that with the help of the electronic means the height of the top (9) in a certain moment is indicated on a display.

FIG. 1

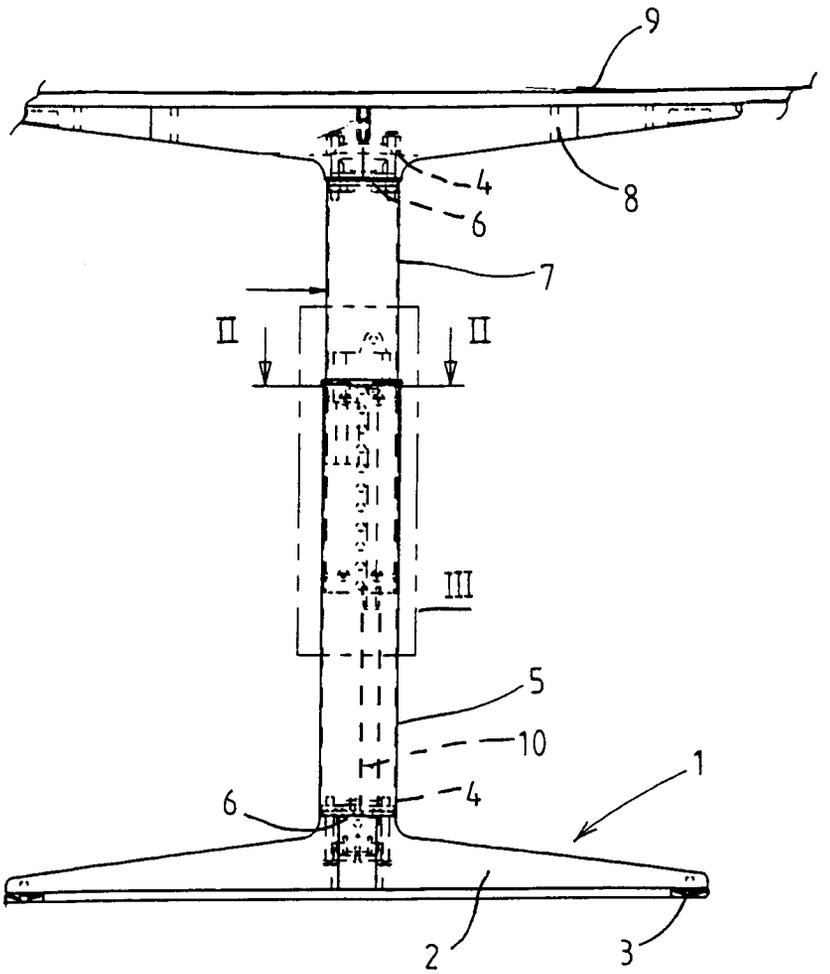
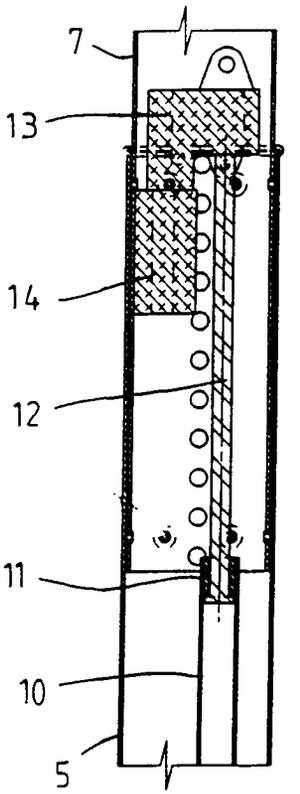


FIG. 3



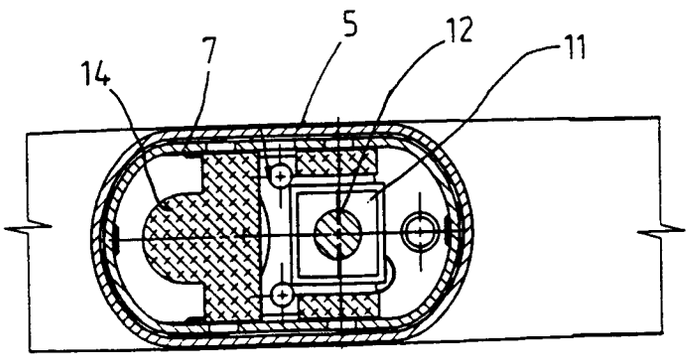


FIG. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 98 20 1827

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	US 5 224 429 A (HAWORTH INC) 6 July 1993 * the whole document *	1-3	A47B9/04 A47B9/20
A	DE 28 46 223 A (VEYHL PRODUKTION KG) 8 May 1980 * the whole document *	1	
A	WO 89 10077 A (KEARNEY) 2 November 1989 * page 6, line 30 - page 10, line 25; figures 1-7 *	1	
A	EP 0 685 185 A (CHRISTOF STOLL GMBH & CO KG) 6 December 1995 * the whole document *	1	
A	DE 297 01 611 U (BERBUER) 3 April 1997 * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6) 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 October 1998	Noesen, R

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