



(11)

EP 3 409 143 A1

(12)

EUROPEAN PATENT APPLICATION
published in accordance with Art. 153(4) EPC

(43) Date of publication:
05.12.2018 Bulletin 2018/49

(51) Int Cl.:
A47B 91/16 (2006.01)

(21) Application number: **16887803.1**

(86) International application number:
PCT/ES2016/070259

(22) Date of filing: **14.04.2016**

(87) International publication number:
WO 2017/129833 (03.08.2017 Gazette 2017/31)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

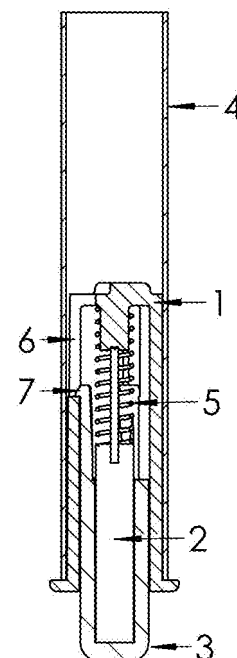
(71) Applicant: **Ortega Frances, Rafael**
46018 Valencia (ES)
(72) Inventor: **Ortega Frances, Rafael**
46018 Valencia (ES)
(74) Representative: **Pardo Zapata, José**
Calle Bellea del Foc nº 6, Bloque A, 9ºM
03015 Alicante (ES)

(30) Priority: **29.01.2016 ES 201600068 U**

(54) **LEVELLER FOR FURNITURE LEGS**

(57) The invention relates to a leveller for furniture legs, comprising overlapping elements: an outer casing (1) fitted onto the lower end of the furniture leg (4), inside which a damping spring (2) is located, which can be accompanied by a spring (5) inserted in a mobile part (3) that penetrates inside the casing (1) according to the requirements of the support surface and the pressure of the furniture, adjusting the height of each leg independently. The elements 1 and 3 fit together, providing the casing (1) with a stop having a groove (6) via which the mobile part (3) moves vertically, autonomously adjusting the height via the pressure exerted by the leg on the ground, which is received by the damping spring (2) located inside the mobile part (3), which causes same to rise inside the casing until it is located at a point of stability.

FIG. 2



EP 3 409 143 A1

Description

FIELD OF THE INVENTION

[0001] The field to which the invention is directed is the furniture. Although the invention has been specifically designed to solve the problem of lack of stability of the tables provided with several legs when in contact with floor surfaces not leveled or irregular, the same is liable to be used in any item of furniture provided with several support legs who may need stability against irregular supporting surfaces by leveling each leg independently of the others in order to get a perfect level of the holding furniture, that is why we indicate that the sector concerned is furniture in general.

BACKGROUND OF THE INVENTION

[0002] So far, in the market, there are different ways to adjust in height the support legs of tables and other furniture in order to be able to correct its stability in presence of irregular support ground or surfaces and with it to level the surface, avoiding the annoying effect "wobble". Mainly, the existing mechanisms employ a system of threading or screwing, either of the own leg or an external element that through manual manipulation serves for adjusting the leg height depending on the unevenness of the supporting surface.

There are also some complex hydraulic systems that allow self-regulation of the legs.

Faced with this state of the technique, the invention which is intended as a simple innovation without manual manipulation that allows leveling the table on any surface by a system of self-regulation of the leg itself, independently, thanks to the internal mechanism which solves easily and without a difficult manipulation the issue of a wobbly table, in the pubs, at home, in the garden, in the classrooms, office meeting tables etc.

The mechanism which constitutes the invention and that we hereunder explain solves that the tables whose legs incorporate the mechanism, by itself, in usual slopes, don't destabilize giving the solution to the problem of "wobble". Once inserted into the legs of any material manufactured and with the forms that the manufacturer of tables and legs required or desired, oval, round, rectangular, square or any others, the problem of possible "wobble" disappears.

DESCRIPTION OF THE INVENTION

[0003] The invention consists on the introduction at the lower end of each table leg a piece (leveler) characterized by having three overlapping components: an outer casing (1) that fits into the own table leg (4) and inside which a piston (2) provided with a spring (5) located in its turn inside a moving part (3) which will penetrate into the casing (1) according to the needs of the support surface until the correct setting of the leg to the ground depending on

the presence of irregularities in the same. All this as reflects graphically Figure 1 herein.

These three elements: casing (1), piston (2) and mobile part, located in each leg of the table (4), auto-regulate independently the height of each one of the legs in order to guarantee the stability of the table and leveling the surface for proper use without any handling or use of screws or threads, solving the problem of "wobble" of the table or furniture without manual manipulation.

To achieve the union of the three elements a fitting system is used, the casing (1) is provided at its top with a stop with the groove (6) with the optimal routing for height adjustment autonomously (figures 2 and 3), and thereby achieve the level of the table. The pressure exerted by the leg on the ground is received by the piston (2) located inside the mobile part (3) and will cause the rise of the same inside the cavity of the casing until the point of stability needed in each case with the help of the spring tension (5).

By achieving the stability thanks to the pressure of the table against the ground independently on each leg, nothing impede that the leveller element in its bottom or friction area with the ground could be in contact with a wheel or other external support element, at the manufacturer election. For this, it is sufficient to couple the desired wheel or element at the lower end of the mobile part (3).

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] To complement the description being made and in order to aid to a better understanding of the characteristics of the invention, a set of drawings, wherein illustrative and not limitative, are attached as an integrated part of the description, it shows the following:

Figure 1 shows a display of the invention, which includes how in the inside of any leg of a table or other item of furniture (4) is inserted or fitted a casing (1) with a vertical displacement groove at its upper part (6), in which the mobile lower part will move (3) equipped with an anchor element (7) in the casing (1) and in which a piston (2) with a spring (5) is located.

Figure 2 represents the leveller object of the invention spread within the leg which it is how it looks like when it has not touched yet the ground or support surface. As it can be seen the piston (2) and the spring (5) are fully extended and the anchor element (7) occupies the bottom of the scroll groove (6) of the upper part of the casing (1)

[0005] On the other hand, Figure 3 shows the leveller, an object of the invention closed, this means in contact with the ground or support surface. When the leg (4) is in contact, the mobile part (3) rises to stay resting on the ground or support surface and the piston (2) and spring (5) are as tense as necessary in order to exert the ade-

quate pressure for leveling the surface, while the anchor parts (7) occupy their position in the anchoring zone (6) [0006] Finally, Figure 4 gives detail of the lace of part of the leveler element with indication of the upper casing (1) in which it has been introduced the lower mobile part (3) with the groove of displacement (6) by which the anchor elements will move (7) offering the outside appearance of the leveler piece.

PREFERENTIAL REALIZATION OF THE INVENTION

[0007] The invention that is intended, as we have advanced, consists of a piece, external to the leg, placed in its inside and its lower end that will be in contact with the ground or support surface to achieve stability and with it the level of the furniture.

[0008] There are two requirements for this invention, the existence of furniture with several support legs with a hollow section and an external element to be introduced inside each one of the legs for the levelling of the furniture according to with the unevenness of the support surface. This element that we call leveller consists of a piece that fits inside of the leg by a casing (1) in whose inside top an anchor pattern (6) has been made. This anchor pattern has inside the inner piston (2) that will press subsequently the spring (5); the piston (2) and spring (5) are embedded in the mobile part (3) that contacts the support surface and moves according to the pressure exerted by the own table on the ground, inside the casing (1) by the anchoring area with groove of displacement (6) by the anchor pieces (7) designed in the mobile part, that run through the anchoring zone (6) of the casing (1) up to occupy the correct height.

[0009] When the levelling element is at rest (not in contact with the ground) it has the appearance that represents Figure 2, with the spring (5) fully extended in the absence of any pressure of the ground on the bottom surface to press the piston (2). Set the table or furniture on the ground, the mobile bottom part (3) which is the one to contact the same, will move through the inside of the upper part with the allowable clearance in accordance with the design of the upper casing as result of the pressure made by the weight of the table on the piston (2), remaining in the position depicted in figure 3 in more or less open position in relation to the weight of the table and the support surface.

length according to the characteristics of the support surface.

2. LEVELER FOR FUNITURE LEGS, according to first claim, **characterized by** the mobile part (3) changes its position in a vertical, diagonal or horizontal development according to the pressure exerted on the piston (2) by the weight of the furniture itself against the support surface.
3. LEVELER FOR FUNITURE LEGS, according to first claim, **characterized by** not requiring external manipulation for leveling due to its self-regulation character by pressure
4. LEVELER FOR FUNITURE LEGS, according to first claim, **characterized by** being capable of leveling table legs of any shape or material that are manufactured
5. LEVELER FOR FUNITURE LEGS, according to first claim, **characterized by** being capable of leveling table legs even provided with wheels.

Claims

1. LEVELER FOR FUNITURE LEGS, **characterized in that** comprises

- Casing (1)
- Internal piston (2)
- Spring (5)
- Mobile piece (3), that upon contact with the support surface of the leg change its vertical

FIG. 1

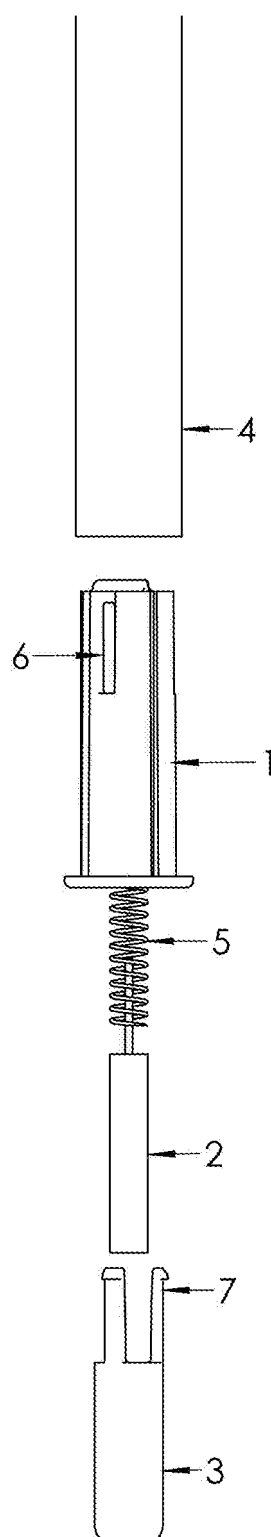


FIG. 2

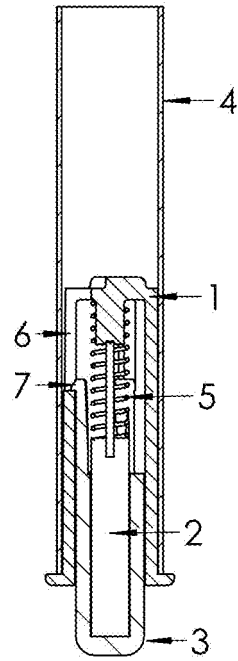


FIG. 3

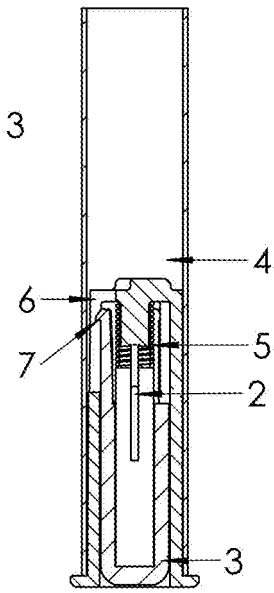
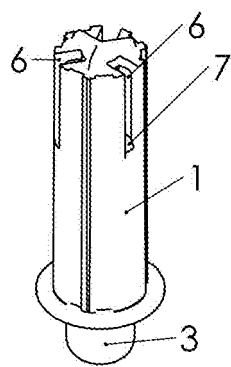


FIG. 4



INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2016/070259

A. CLASSIFICATION OF SUBJECT MATTER

A47B91/16 (2006.01)

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)

A47B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 814589 A 25/06/1937, page 2, line 1 - page 3, line 30; figures 1 - 9.	1-5
X	KR 20110053651 A (KIM BACK JOONG) 24/05/2011, Abstract from DataBase WPI. Retrieved of Epoque. Accession Number, an:2011-H02996. figures 2-4.	1-5
X	US 2956368 A (ELI KLEIN) 18/10/1960, column 4, lines 7 - 58; figures 5 - 6.	1-5
A	US 5251858 A (ULTEE ARNOLDUS J) 12/10/1993, column 2, line 26 - column 4 figures 1 - 3.	1-5

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance.	
"E" earlier document but published on or after the international filing date	
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"O" document referring to an oral disclosure use, exhibition, or other means.	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents, such combination being obvious to a person skilled in the art
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search
14/10/2016

Date of mailing of the international search report
(19/10/2016)

Name and mailing address of the ISA/

Authorized officer
S. De Miguel De Santos

OFICINA ESPAÑOLA DE PATENTES Y MARCAS
Paseo de la Castellana, 75 - 28071 Madrid (España)

Facsimile No.: 91 349 53 04

Telephone No. 91 3493270

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2016/070259

C (continuation).	DOCUMENTS CONSIDERED TO BE RELEVANT	
Category *	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 204541382U U (TIANJIN TIANBAO HUAKE MACHINERY CO LTD) 12/08/2015, Abstract from DataBase WPI. Retrieved from Epoque. Accession Number, an:2015-58752G. Figures 1-4.	1-5

Form PCT/ISA/210 (continuation of second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2016/070259

Information on patent family members

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
US5251858 A	12.10.1993	NONE	
FR814589 A	25.06.1937	NONE	
CN204541382U U	12.08.2015	NONE	
KR20110053651 A	24.05.2011	KR101149596B B1	15.06.2012
US2956368 A	18.10.1960	NONE	

Form PCT/ISA/210 (patent family annex) (January 2015)