

(19)



(11)

EP 2 174 568 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

14.04.2010 Bulletin 2010/15

(51) Int Cl.:

A47B 49/00 (2006.01)**A47B 81/00 (2006.01)**(21) Application number: **08017719.9**(22) Date of filing: **09.10.2008**

(84) Designated Contracting States:

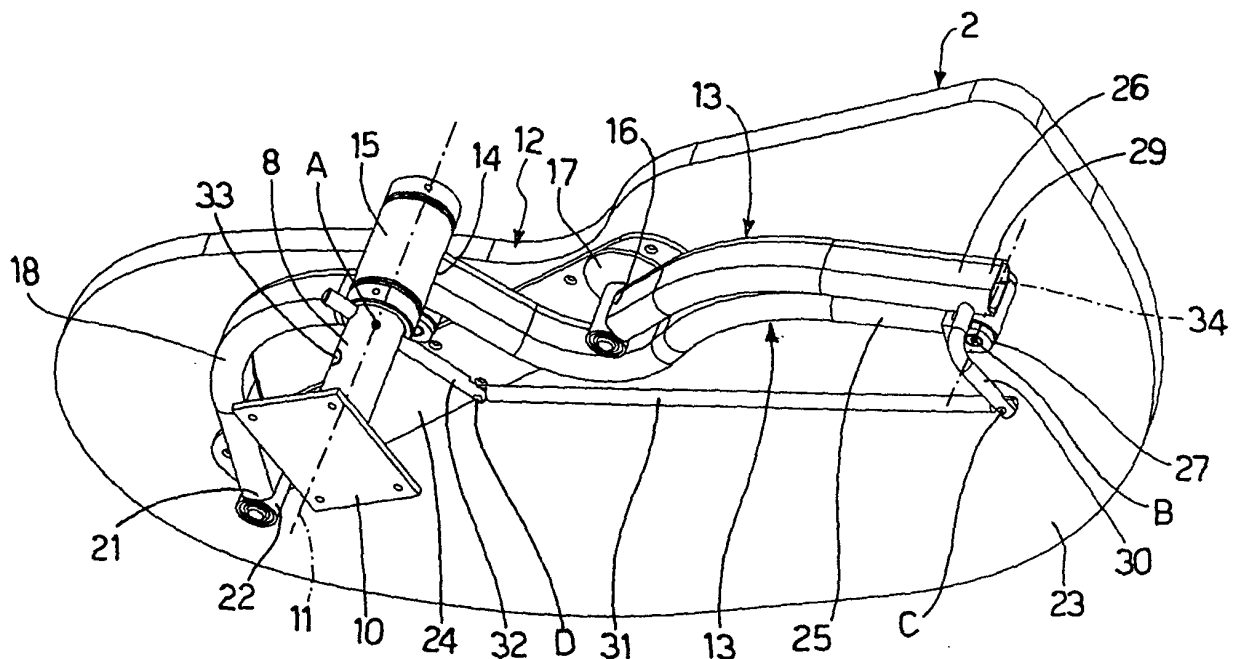
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT
RO SE SI SK TR**

Designated Extension States:

AL BA MK RS(72) Inventor: **Bonin, Franco****36072 Chiampo (VI) (IT)**(74) Representative: **Fuochi, Riccardo****APTA S.r.l.****Via Ca' di Cozzi 41****37124 Verona (IT)**(71) Applicant: **VIBO S.p.A.****36070 Trissino (VI) (IT)****(54) Device for the movement and support of elements of a furniture unit**

(57) A device for the movement and support (1) of resting and containment elements (2), e.g. baskets, shelves, et cetera, of a furniture unit (3), with a corner that is not directly accessible (7) comprises a guide mechanism (13, 18) fixed in a rotating manner to a support column (8) and suitable for moving the resting and con-

tainment elements (2) from a picking up area, in which said elements (2) protrude beyond the plane (V) of the opening (6) determined by the door (5) of the furniture unit (3), to a resting area, in which said elements (2) are in the corner not directly accessible (7) of the corner unit (3).

**FIG.3****EP 2 174 568 A1**

Description

BACKGROUND of the INVENTION.

[0001] The present invention relates to a device for the movement of a resting and containment element of a furniture unit, in particular, for the movement of baskets, shelves, et cetera, in modular furniture units for kitchens, laboratories and the like, comprising the so-called corner units, with a corner that is not directly accessible. Said device comprises a support column and guide means which assure the support and movement of at least one unitary resting and containment element associated to the support column.

STATE OF THE PRIOR ART

[0002] Corner units, in particular kitchen units, comprise a door that determines the opening and an internal space in which the most internal part is not easily accessible from the opening. This leads to difficulty in accessing any contents of the furniture unit that are arranged in the most internal part. For this reason, mechanisms have been proposed that allow the movement of the shelves or baskets from the inaccessible part of the corner to a part where they are more easily accessible, e.g. to the area adjacent to an existing door.

[0003] Using an assembly accessory which comprises a column with a substantially vertical rotation axis, at least one resting and containment element is moved from an internal position to an external one, relative to the corner of the furniture unit in which the external position of at least one resting and containment element protrudes beyond the opening plane of the door of the corner unit.

[0004] The German utility model DE-94/17324 describes a device composed of shelves of a semi-circular shape arranged one above the other, the shelves being rotatable around a vertical rotation axis from an internal position to an external one in which half of the shelf protrudes beyond the opening plane of the door of the furniture unit. It is seen that the accessibility of the other half of the shelf is limited.

[0005] The Swedish patent SE-465699B describes a corner unit in which each shelf is composed of two shelves which are individually rotatable around separate vertical rotation axes.

[0006] The first shelf of a shape of approximately one quarter of a circle rotates approximately 270 degrees and protrudes completely from the opening plane of the door of the furniture unit. The second shelf can rotate towards the outside only after the first shelf has been rotated outwards; in the external position, the second shelf protrudes beyond the opening plane of the door by only half of its surface area. This configuration involves considerable costs but improves the accessibility to the surfaces of the two shelves.

[0007] The USA patent US-7318631B2 describes a rectangular shaped corner unit in which there is a device

fitted with a support column with a vertical rotation axis for at least one shelf of a substantially semi-circular shape. The shelf moves from an internal position towards the external position in which the shelf protrudes beyond the opening plane of the door of the corner unit. This device is fitted with two arms which are connected to a connection point located on the underside of each shelf respectively. The first arm is connected in a rotating manner to the support column while the second arm is connected to a support mounted near the opening of the door on a side wall. This support has a rotation axis which extends parallel to the rotation axis of the support column. The shelf movement is guided by these two arms.

[0008] In the European patent application EP-1776899A1 the extractable element comprises a support base and a support with two arms fixed in four points to said support base. The bases are shaped in such a way as to rotate towards the door opening from the corner of the furniture unit with a rotational movement around a hinge, assisted also by the presence of a support wheel which moves along a circular path on a plate. The arms are rigidly connected to each other and are fixed inside the unit and close to the door opening on a side wall. The bases have the shape of two circular sections.

[0009] The devices described in these last two documents are fairly complex in terms of their assembly inside the corner unit, in particular because they must be fixed to the base of the furniture unit on a side adjacent to the opening and laterally to at least one opposite wall.

OBJECTS OF THE INVENTION.

[0010] One object of this invention is to improve the prior art.

[0011] A further object of this invention is to develop a device for the movement and support of a resting and containment element of a furniture unit that is easy to manufacture.

[0012] The device to which this invention refers may be fitted with one or more resting and containment elements which move independently or together. The resting and containment elements that may be present inside the furniture unit are separated vertically and aligned one above the other inside the furniture unit itself.

[0013] A further object of this invention is to develop a device for the movement and support of a resting and containment element of a furniture unit that can easily be adjusted in both height and position.

[0014] A further object of this invention is to develop a device for the movement and support of a resting and containment element of a furniture unit which can make the best use of the internal space of the furniture unit.

[0015] A further object of this invention is to develop a device for the movement and support of a resting and containment element of a furniture unit which can be used also in furniture units made in different ways, e.g. without a side wall.

[0016] In compliance with an aspect of the invention,

a device for the movement and support of a resting and containment element of a furniture unit is provided according to the independent claim 1.

[0017] The dependent claims refer to preferred and advantageous embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] Further characteristics and advantages of the invention will become clearer from the description of a device for the movement and support of resting and containment elements of a furniture unit, illustrated as an example only in the attached drawings in which:

the figure 1 is a frontal view from above of a device for the movement and support of at least one resting and containment element of a furniture unit according to this invention;

the figure 2 is a side view of the device for the movement and support of at least one resting and containment element of a furniture unit as shown in figure 1;

the figure 3 is a front perspective view from below of the device shown in figures 1 and 2;

the figure 4 is a rear perspective view from below of the device shown in the previous figures;

the figure 5 is a plan view that illustrates the initial position F inside the furniture unit of the device shown in the previous figures;

the figure 6 is a plan view that illustrates a first intermediate position of the movement from the internal position F to the external position G of the device shown in the previous figures;

the figure 7 is a plan view that illustrates a second intermediate position of the movement from the internal position F to the external position G of the device shown in the previous figures;

the figure 8 is a plan view that illustrates a third intermediate position of the movement from the internal position F to the external position G of the device shown in the previous figures;

the figure 9 is a plan view that illustrates a fourth intermediate position of the movement from the internal position F to the external position G of the device shown in the previous figures;

the figure 10 is a plan view that illustrates the final position G of the movement from the internal position F to the external position G of the device shown in the previous figures;

the figure 11 is a plan view that illustrates the trajectory of the various components of the device during the different phases of movement illustrated in figures 5-10.

EMBODIMENTS OF THE INVENTION.

[0019] Referring to the attached figures, a device 1 for the movement and support of at least a resting and con-

tainment element 2 according to this invention is illustrated.

[0020] The device 1 is inserted inside a corner unit 3 and said furniture unit 3 comprises at least a base 4, a door 5, an opening 6 forming a plane V, substantially vertical, defined by the door 5 and a part 7 which is not directly accessible from the opening 6.

[0021] In figures 1-2 and 5-10, the furniture unit 3 and its parts 4, 5, 6 and 7 are represented only partially for reasons of clarity.

[0022] In the version illustrated in the figures, only one resting and containment element 2 is represented, of a roughly ellipsoidal shape, however more than one resting and containment elements may be overlapped one above the other, according to the needs of the user and the height of the furniture unit 3 itself. The resting and containment elements 2 may be moved independently from each other, or together in groups, using the device 1 applied to each element 2, from an internal position F of the furniture unit 3 to an external position G and vice versa.

[0023] The device for the movement and support 1 comprises a support column 8 fixed by fixing means 9. In a version of the invention illustrated in figures 1 and 2, the fixing means 9 comprise a plate 10 fixed at the base 4 of the corner unit 3. The support column 8 is positioned adjacent to the opening 6 of the furniture unit 3. The support column 8 is equipped with a rotation axis 11 which is substantially vertical and which may present, along the direction of the axis 11, a series of holes 33 which allow the insertion of a further assembly element.

[0024] To the support column 8 are fixed directly and/or indirectly the movement means 12 which comprise guides 13, 18 and which allow the movement of a resting and containment element 2 from the internal position F of the furniture unit 3 to the external position G. Each resting and containment element 2 is in fact fixed to a support column 8.

[0025] The first guide 13 has a first end 14 connected to the support column 8 and rotates around the rotation axis 11. The end 14 is connected to the support column 8 by a sleeve 15. The sleeve 15, in turn, comprises a tubular element and appropriate bearing means, of a revolving or sliding type, to facilitate the rotation without any noticeable play of the guide 13 on the support column 8.

[0026] The first guide 13 has a second end 16 connected in a rotating manner to a connection point 17 of the resting and containment element 2.

[0027] The first guide 13 of the device for the movement and support 1 may also comprise further movement means. In figures 2-10, the first guide 13 is formed of a first part 25 which has the end 14 connected in a rotating manner to the support column 8 and a second end 28.

[0028] The first guide 13 is also formed by a second part 26 which comprises a first end 29 connected in a rotating manner to the second end 28 of the first part 25 by connection means 27 which have a rotation axis 34

that is parallel to the axis 11 of the support column 8. Furthermore, the second part 26 comprises an end 16 connected in a rotating manner to the rotating connection point 17 of the resting and containment element 2.

[0029] In a further version, illustrated in figures 2-10, the first end 29 of the second part 26 of the first guide 13 is connected to an angled arm 30; the angled arm 30 is hinged to a tie rod 31. The tie rod 31 is hinged to a plug 32 connected in a fixed manner to the support column 8. The plug 32 can be inserted into each of the holes 33 present on the support column 8, in order to assure the simple and rapid assembly and height adjustment of each resting and containment element 2 and of the device for the movement and support 1.

[0030] Looking from above, in figure 11, it can be seen that a relative movement occurs between the first part 25 and the second part 26 of the first guide 13: in particular, while the first part 25 executes a rotation in a clockwise direction, the second part 26 executes a counter-rotation in an anticlockwise direction.

[0031] It can also be seen that, during the extraction movement of the element 2, the end 21 of the guide 18 moves along a substantially circular trajectory L, while the end 17 of the guide 13 moves along a substantially straight trajectory M.

[0032] To assure this counter-rotation drive transmission means are present which may be of the mechanical type, such as e.g. an articulated quadrilater, a chain, a toothed belt, et cetera. Said drive transmission means may also be of a different type, e.g. of an electric type with an angular position detector for the first part 25, mounted on the column 8, and an electric motor mounted between the first part 25 and the second part 26 of the guide 13.

[0033] Figures 3 and 4 illustrate in more detail the angled arm 30, the tie rod 31, the plug 32 and the connection means 27, which connect the first part 25 and the second part 26 of the first guide 13, which define the geometric points A, B, C, D.

[0034] The point A is defined by the intersection of the plug 32 with the rotation axis 11 of the support column 8; the point B is defined by the hinge of the connection means 27, this hinge being positioned along the rotation axis 34; the point C is defined by the joint between the angled arm 30 and the tie rod 31; and the point D by the joint between the tie rod 31 and the plug 32.

[0035] The points A, B, C and D form an articulated quadrilater which forces the trajectory of the guide 13 and, consequently, to each resting and containment element 2 in its movement from the internal position F of furniture unit 3 to the external position G. Said articulated quadrilater determines a relative rotation of the first part 25 of the first guide 13 with respect to the plug 32. In particular, the first part 25, moving clockwise, determines the anticlockwise movement of the plug 32. Through the tie rod 31, also the angled arm 30 moves anticlockwise around the rotation axis of point B. Consequently also the second part 26 of the first guide 13 moves in the same

anticlockwise direction. In this way, the relative movement is obtained of the two parts of the first guide 13.

[0036] The longer the plug 32 is, the greater the rotational movement of the angled arm 30. In this way, depending on the lengths of the plug 32 and the angled arm 30, the required depth of the counter-rotation of the second part 26 is obtained.

[0037] In this way the resting and containment element 2 will carry out a precise and forced movement, independently of the type of action applied to the resting and containment element 2 itself.

[0038] As far as the second guide 18 is concerned, in the embodiment illustrated in figures 1 and 4, this has a first end 19 connected in a rotating manner to the end 14 of the first guide 13 by connection means 20. The assembly of the device 1 is in this way simplified, allowing the positioning of the movement means 12 in just one single phase.

[0039] The connection means 20 are similar to the connection means 27 of the first guide 13. Said means, 20 and 27, may vary considerably as there are many different known mechanisms that carry out the same function of connection and rotation (e.g. bushing shaped supports joined to forks fitted with a pin, comb means, etc.).

[0040] In a further possible version, not illustrated, the end 19 of the second guide 18 may be connected directly to the support column 8 by sleeve means similar to the sleeve 15 of the first guide 13.

[0041] The second guide 18 comprises a second end 21 connected in a rotating manner to a rotating point of connection 22 of the resting and containment element 2. Each resting and containment element 2 has a lower part 23.

[0042] In a version, not illustrated, the rotating points of connection 17 and 22 are fixed directly to the lower part 23 of the resting and containment element 2. In a further version, illustrated in figures 3-10, the rotating points of connection 17 and 22 may be fixed on a reinforcing bar 24 positioned on the lower part 23 of the resting and containment element 2. The reinforcing bar 24 also helps to increase the resistance and rigidity of the resting and containment element 2.

[0043] During the outwards movement of the resting and containment element 2 from the internal position F of the corner unit 3 to its external position G, illustrated in figures 5-10, the second guide 18 essentially follows a semi-circular clockwise movement.

[0044] The movement of the resting and containment element 2 controlled by the first and the second guide, 13 and 18, between the internal position F of the corner unit 3 and the external position G comprises the various phases illustrated in figures 5-10.

[0045] The figure 5 illustrates the internal position F in the corner unit 3 of the resting and containment element 2. In this position the first part 25 and the second part 26 of the guide 13 are close to each other in front of the opening 6 of the door 5 of the furniture unit 3. The second guide 18 is in the end-of-stroke position.

[0046] In the figure 6, the resting and containment element 2 starts to protrude from the plane V of the opening 6, the guide 18 starts its clockwise rotation and the two parts of the first guide 13 start to rotate and move away from each other. In particular, the first part 25 starts to move in a clockwise direction and the second part 26 anticlockwise.

[0047] The figures 7 and 8 represent two progressive moments of the outwards movement of the resting and containment element 2 in which the second guide 18 continues its semi-circular movement of rotation towards the first part 25 of the guide 13. The first part 25 continues to rotate in a clockwise direction while the second part 26 continues to move in an anticlockwise direction.

[0048] In the figure 9, the guide 13 is almost fully protruding from the plane V of the opening 6, the resting and containment element 2 starts to move to the right and the second guide 18 continues to move closer to the first part 25 of the first guide 13.

[0049] In the figure 10, the resting and containment element 2 has reached its external position G, the second guide 18 has closed onto the first part 25 of the guide 13 and the second part 26 has completed its rotation movement in an anticlockwise direction, allowing the full protrusion of the resting and containment element 2 beyond the plane V of the opening 6.

[0050] The second guide 18 and the first part 25 of the first guide 13 have a curved shape in order to be able to move past the wall of the furniture unit 3 on which the door 5 is fixed and in order to continue along their stroke until the complete protrusion of the resting and containment element 2. The same movement is done by the resting and containment element 2 during its return to the internal position F of the corner unit 3.

[0051] In the figures 5-10 the furniture unit 3 is shown with the opening 6 located on the right side of the front wall of the furniture unit 3. However, this does not constitute a constraint as the device for the movement and support 1 of each resting and containment element 2 works in the same way, but in the opposite direction, even if the opening 6 of the door 5 is located on the left side of the corner unit 3.

[0052] The shape of the resting and containment element 2 is approximately ellipsoidal in order to maximise the surface of the resting and containment element 2, considering the type of movement that must be carried out to move from the internal position F to the external position G of the corner unit 3 and vice versa.

[0053] The resting and containment elements 2 may be e.g.: baskets (not illustrated), shelves, et cetera.

[0054] Through this invention it is therefore possible to use all types of baskets, shelves or other support means, also with light structures, e.g. those used in normal furniture units where they are supported on at least two sides.

[0055] The invention thus conceived is susceptible to numerous modifications and variants all of which fall within the concepts of the invention expressed in the attached

claims.

Claims

1. Device (1) for the movement and support of at least a resting and containment element (2) for a corner unit (3), said corner unit (3) being equipped with an opening (6) having a substantially vertical plane (V), said device (1) comprising:

a support column (8) adjacent to the opening (6) and equipped with a substantially vertical rotation axis (11);

at least a resting and containment element (2) associated with the support column (8), said resting and containment element (2) being movable from an internal position F to an external position G in which it protrudes beyond the plane (V) of the opening (6), said resting and containment element (2) having a lower part (23); movement means (12) comprising a first guide (13), having a respective second end (16), a second guide (18), having a respective second end (21), said second ends being connected in a rotating manner to respective connection points (17, 22) positioned in the lower part (23) of the resting and containment element (2),

characterized by the fact that said movement means (12) are connected in a rotating manner directly and/or indirectly to the support column (8), and are suitable for moving the resting and containment element (2) beyond the plane (V) of the opening (6).

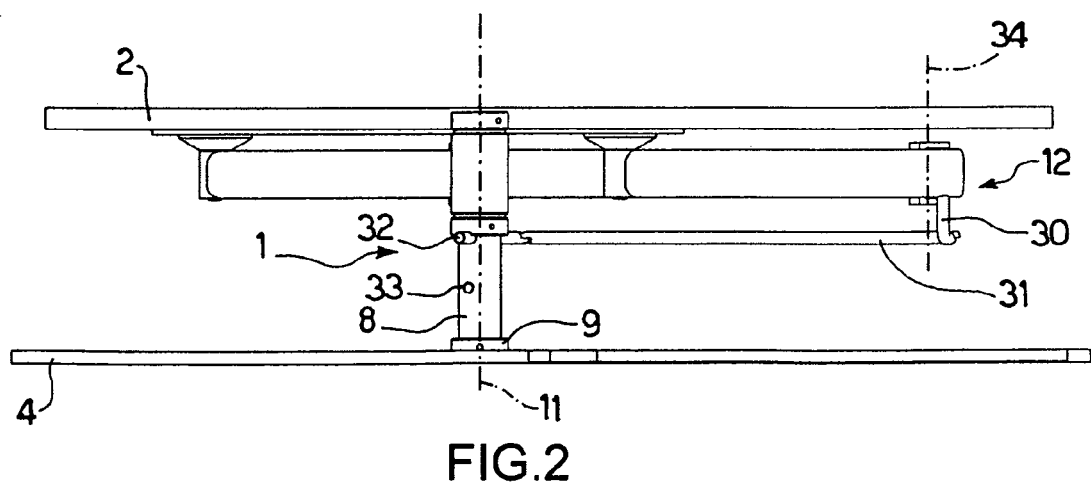
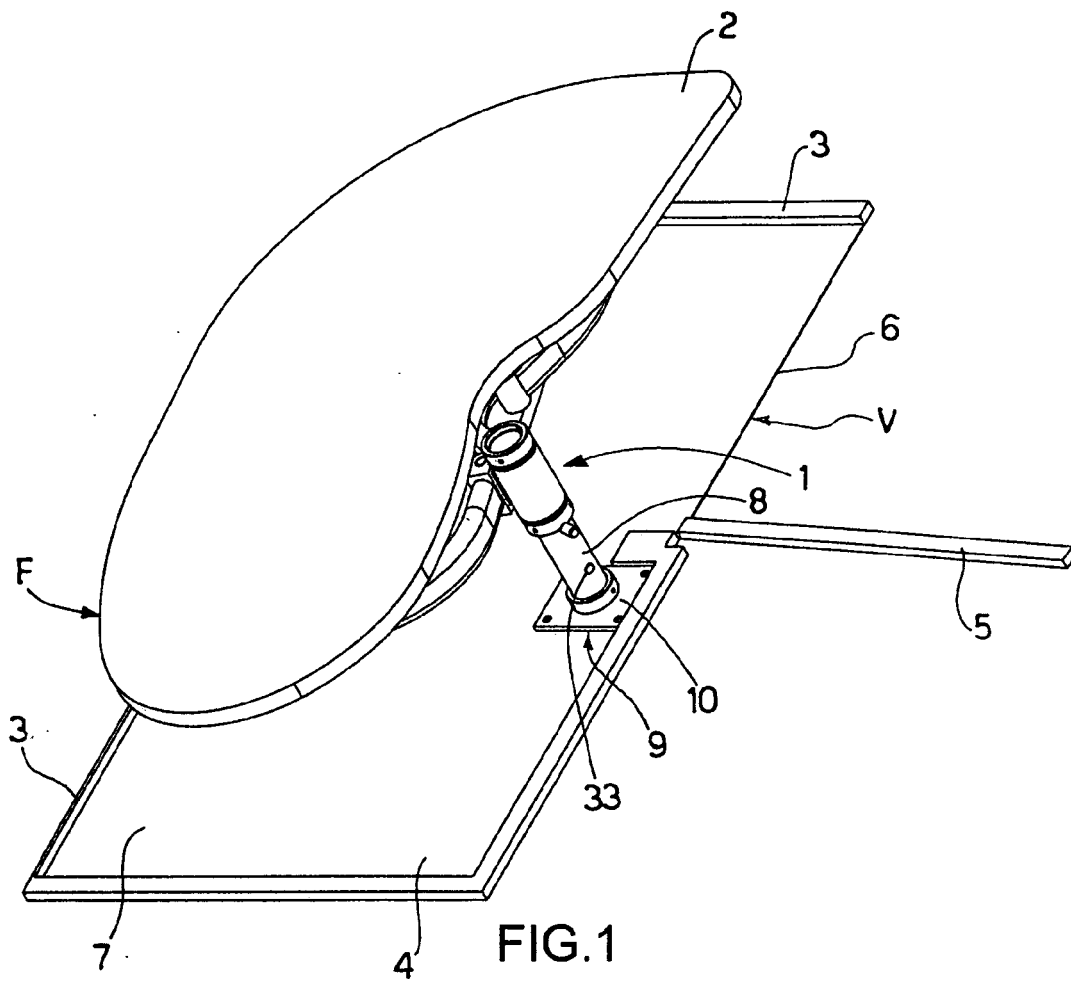
2. Device according to claim 1, wherein said first guide (13) comprises a first respective end (14), and said second guide (18) comprises a first respective end (19), and in which said first ends (14, 19) are connected in a rotating manner directly and/or indirectly to the support column (8).
3. Device according to claim 1 or 2, wherein said support column (8) has a series of holes (33) with which said movement means (12) are associable.
4. Device according to any of the previous claims, wherein said first guide (13) is an articulated guide comprising a first and a second part (25, 26) connected together through connection means (27).
5. Device according to claim 4, wherein said first end (14) of the first part (25) comprises sleeve means (15) connected in a rotating manner to the support column (8).
6. Device according to claim 4 or 5, wherein the first part (25) of the first guide (13) has a second end (28)

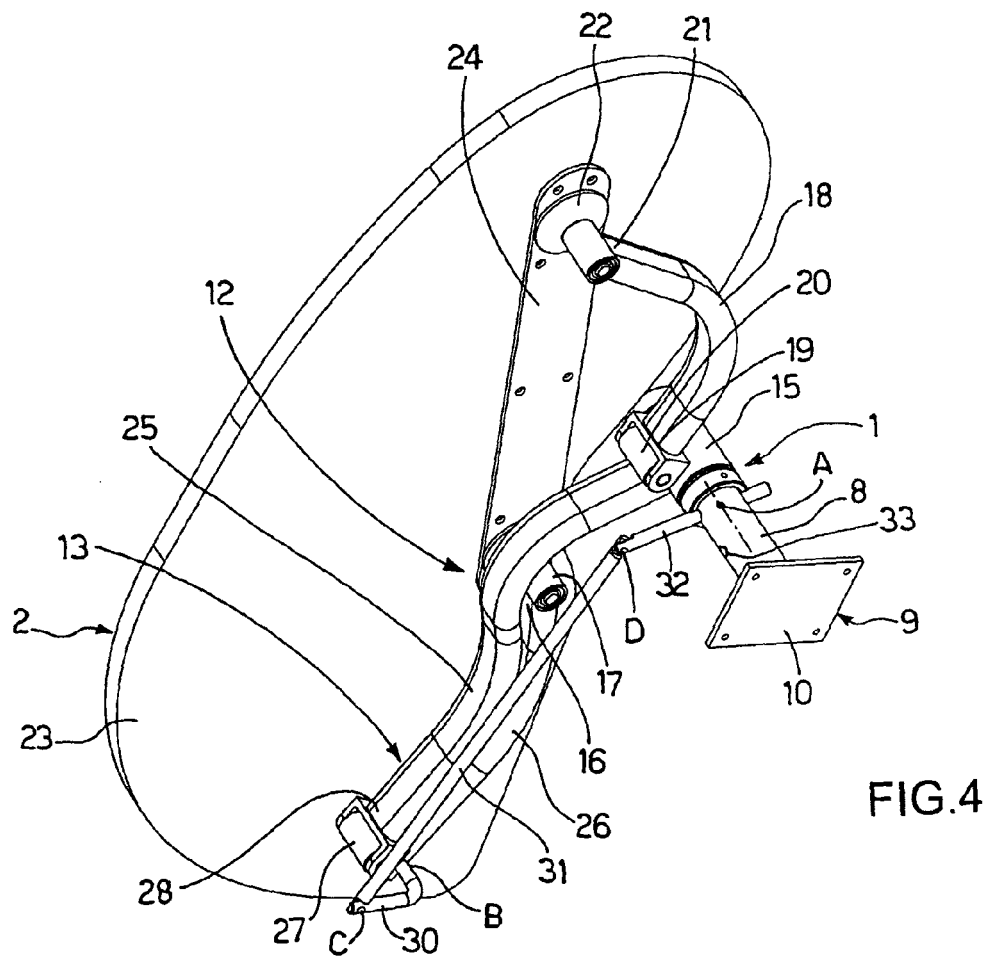
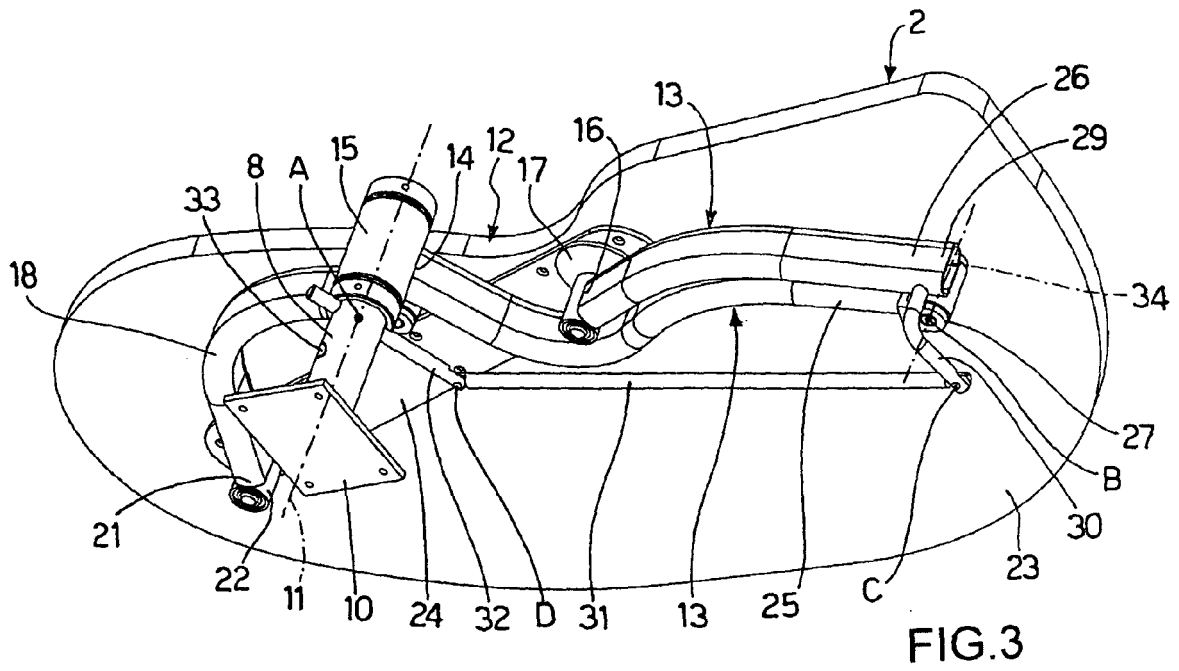
connected in a rotating manner, through the rotating connection means (27), to a first end (29) of the second part (26) of the first guide (13).

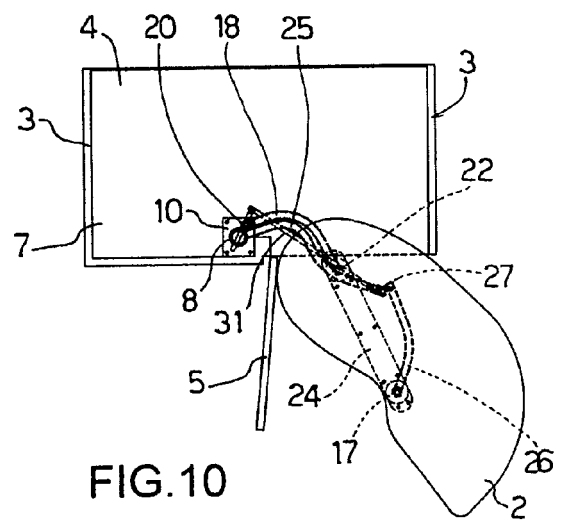
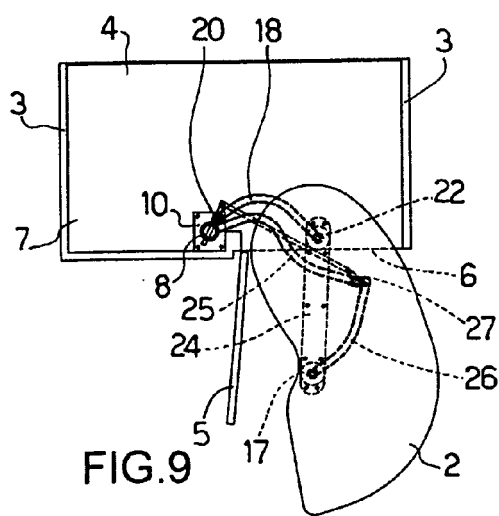
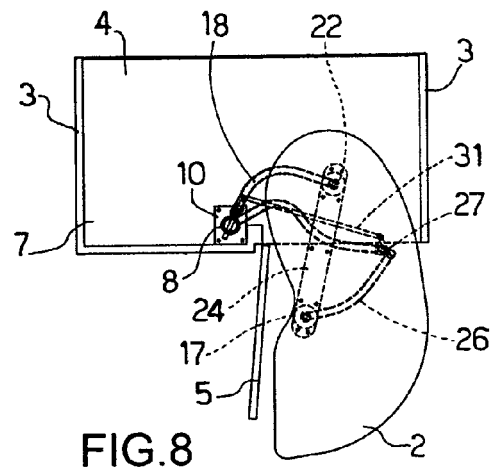
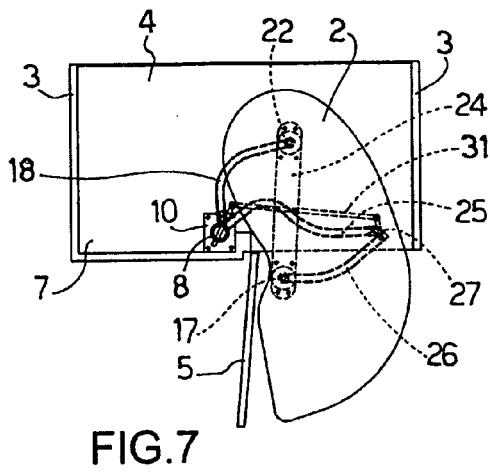
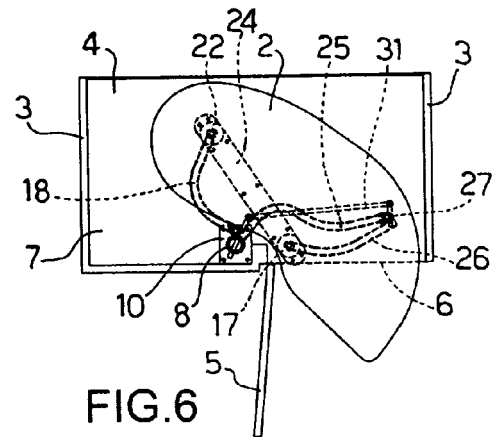
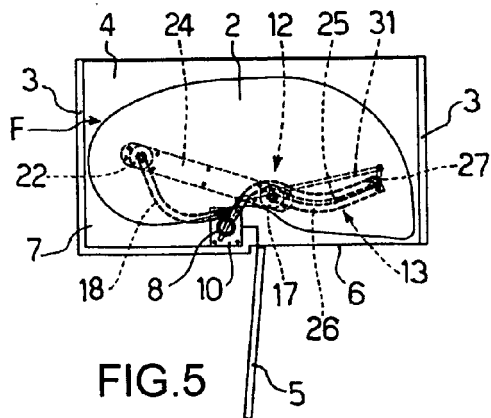
7. Device according to claim 6, wherein said second end (16) of the second part (26) of the first guide (13) comprises a second end (16) connected in a rotating manner to the connection point (17) of the resting and containment element (2). 5
8. Device according to any of the previous claims, wherein the second guide (18) has a first end (19) connected in a rotating manner to the first guide (13) through the rotating connection means (20). 10
9. Device according to any of the previous claims, wherein the second guide (18) comprises a second end (21) connected in a rotating manner to the connection point (22) of the resting and containment element (2). 15
10. Device according to any of the previous claims, wherein the connection points (17, 22) positioned in the lower side (23) of the resting and containment element (2), are aligned on a bar (24) positioned in the lower side (23) of the resting and containment element (2). 20
11. Device according to claim 10, wherein the bar (24) comprises a reinforcing structure suitable for increasing the resistance and rigidity of the resting and containment element (2). 25
12. Device according to any of the claims from 4 to 11, comprising drive transmission means suitable for transmitting a relative rotation between said column (8) and said second part (26) of the first guide (13), said drive transmission means being of the mechanical type, such as e.g. an articulated quadrilater (30-32), a chain, a toothed belt, et cetera or of an electric type, e.g. an angular position detector for the first part (25), mounted on the column (8), and an electric motor mounted between the first part (25) and the second part (26) of the first guide (13). 30
13. Device according to claim 12, wherein said drive transmission means form an articulated quadrilater with four articulated points (A, B, C, D), said articulated quadrilater comprising an angled arm (30) associated with the first end (29) of the second part (26) of the first guide (13), a tie rod (31) hinged at one end to said angled arm (30) and at another end hinged to a plug (32) fixed in turn to the support column (8). 35
14. Device according to claim 13, wherein said plug (32) can be inserted into each of the holes (33) present on the support column (8). 40

15. Device according to claim 13 or 14, wherein said articulated quadrilater (A, B, C, D) forces the trajectory (M) of the second end (16) of the second part (26) of the first guide (13) and, consequently, of the resting and containment element (2) in its movement from the internal position (F) to the external position (G). 45

16. Device according to any of the claims from 13 to 15, wherein said articulated quadrilater (A, B, C, D) determines a relative movement of the first (25) and the second (26) part of the first guide (13), which move in opposite directions. 50







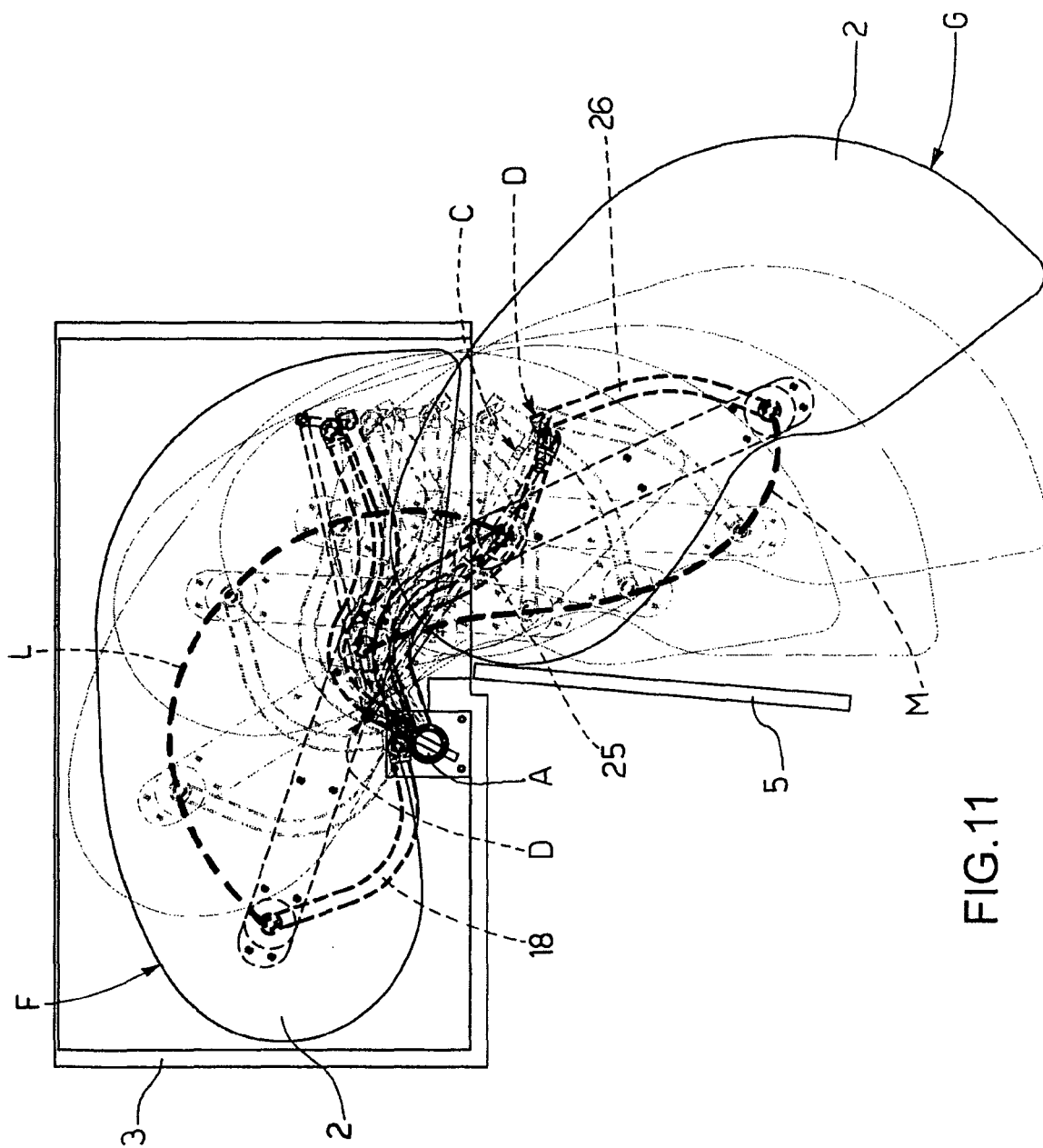


FIG.11



EUROPEAN SEARCH REPORT

Application Number
EP 08 01 7719

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
D,A	US 2006/012273 A1 (KREYENKAMP REINER [DE]) 19 January 2006 (2006-01-19) * figures 1-10 *	1	INV. A47B49/00 A47B81/00
A	----- EP 1 925 239 A (HETTICH HETAL WERKE [DE]) 28 May 2008 (2008-05-28) * figures 1-10 *	1	
A	----- DE 20 2007 010284 U1 (KESSEBOEHMER KG [DE]) 13 March 2008 (2008-03-13) * figure 5 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 7 April 2009	Examiner Brunie, Franck
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 3
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 01 7719

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

07-04-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006012273 A1	19-01-2006	CN 1726838 A	01-02-2006
		DE 202004011200 U1	01-12-2005
		EP 1616503 A2	18-01-2006
		RU 2310360 C2	20-11-2007

EP 1925239 A	28-05-2008	DE 102006055805 A1	29-05-2008

DE 202007010284 U1	13-03-2008	NONE	

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- DE 9417324 [0004]
- SE 465699 B [0005]
- US 7318631 B2 [0007]
- EP 1776899 A1 [0008]