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(54) HINGE FOR FURNITURE

(57) **SUMMARY**

Furniture hinge comprising an axis whereupon two or more independent couples of blades are mounted, axially distant from one another and restrained from moving along said axis, each of its blades consisting of a flat plate with holes for the passage of binding screws and an ring with an axis parallel to the plate and distant from it at a distance which is bigger than the external radius of the ring, being the ring and plate joined together by a nucleus or intermediate arm. The couples of blades are mounted over independent and aligned axes, materialised in other nucleus or bolts, and separated by an intermediate cover pin, wherein the ring of the internal blade of each couple of blades is housed; the ring of the external blade being, in at least one of the couples of blades, restrained from rotation with respect to its corresponding axis, and the ring of the internal blade being restrained from rotation with respect to the cover pin.

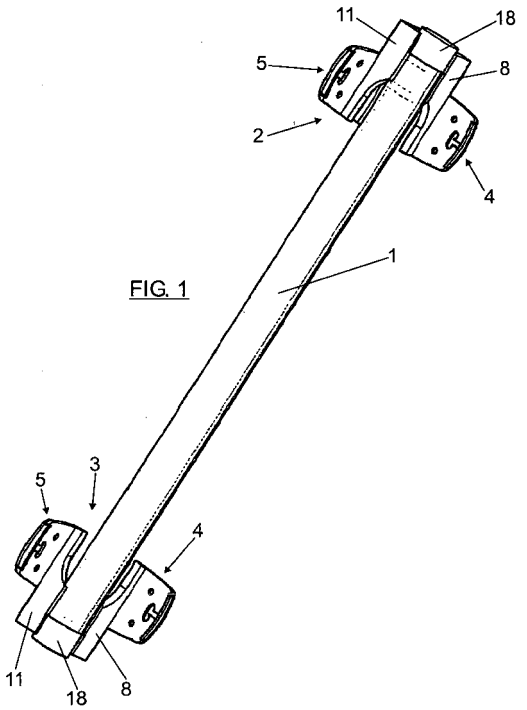

FIG. 1

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a furniture hinge comprising an axis whereupon two couples of end hinge blades are mounted and to which the elements of the pieces of furniture to be articulated are fixed.

[0002] More precisely, the type of hinge of this invention is such that the length of its joint axis is approximately the same as the length of the pieces to be connected, whereas the length of the blades is quite inferior to that of said axis, said axis which is located at certain distance from the plane defined by the blades, when these are located in coplanar position.

[0003] A hinge of this kind is described in the utility model 1030929. In this hinge, the joint axis is constituted by a cover pin, on the extremes of which there are mounted couples of blades, which are axially distant from one another and restrained from moving along the axis. Each blade comprises a flat plate parallel to the axis of rotation, and at least one axis ring parallel to the plate and placed far-off by a distance larger than the external radius thereof. Through the ring, the blade is mounted on the cover pin which materialises the axis of rotation. The hinge can include two or more couples of blades and the blades of the end couples have through-holes for the passage of binding screws into the pieces of furniture connecting the hinge.

[0004] In the utility model 200602185 a similar hinge is described, comprising, in at least one of the blades of each group of blades and from the surface pointing to the area resting on the furniture, a threaded hole for a screw, whose head or external end is left outside the hole to define a support for the blade on the piece of furniture that said blade faces. By turning this screw one way or the other, possible gaps or separations between the elements connected by the hinge and the piece of furniture can be fixed.

[0005] In both cases the rings of the couples of blades, as well as the intermediate separating rings, are located next to the ends of the intermediate cover pin; and therefore, they are visible, which forces to combine the colour and finish of the rings and the cover pin.

[0006] On the other hand, the plates of the blades which occupy end positions in the hinge can collide against the edge of the lid and the furniture planking, which can create mounting problems.

DESCRIPTION OF THE INVENTION

[0007] The object of the present invention is to eliminate the aforementioned problems, by means of a hinge in which the components of the blades, mounted on the axis, are concealed by the profile or cover pin and by interchangeable end caps, so that there are no finishing coat problems between the different components of the hinge, thus, optimizing its manufacture and improving its aesthetics.

[0008] According to another feature of the hinge of the invention, the plates of the blades are offset towards the centre of the ensemble, remaining slightly distant from the ends of the hinge, thereby releasing the thickness of the lid and plank from the structure of the piece of furniture.

[0009] The advantages set forth are obtained by the hinge of the invention, which is characterized in that the two couples of blades mounted on two independent and aligned axes, materialized in respective bolts or cylindrical nucleuses. These axes are separated by an intermediate cover pin, wherein the internal blade ring of each couple of blades is housed. The mounting of the blades is carried out in such a way that the ring of the external blade of each couple of blades is restrained from rotation with respect to the corresponding axis, whereas the ring of the internal blade of each couple of blades is restrained from rotation with respect to the cover pin. That is to say that in each couple of blades the external blade is restrained from rotation with respect to the axis materialized in the aforementioned nucleus or bolt, whereas the internal blade is restrained from rotation with respect to the cover pin.

[0010] In each couple of blades the plate of both blades is axially offset towards the centre of the cover pin, with respect to the middle cross-sectional plane of the corresponding ring. This feature is the one that allows releasing the thickness of the lid and plank from the structure of the piece of furniture, when mounting the hinge.

[0011] According to another feature of the hinge of the invention, among the different holes which the plates have for the passage of binding screws, one of these holes is oblong, with a bigger dimension parallel to the axis of the hinge, being this hole located next to the parallel edge of the axis of the corresponding ring and leading to said edge through a central outlet, wide enough to let the rod of the corresponding screw get through.

[0012] The ring of the external blade of each couple of blades is located outside the cover pin and it is covered by a cap with the same diameter as said pin, being this cap interchangeable so that it can be adapted to the color or finish of the cover pin.

[0013] In order to prevent the relative rotation between the ring of the external blade of each couple of blades and the nucleus or bolt which materializes the axis, said ring and the section of the axis housed therein have matching flat segments, acquiring a cotter pin configuration which prevents the aforementioned rotation.

[0014] In addition, in order to prevent the rotation between the internal blade of each couple of blades and the cover pin, the arm or nucleus joining the ring and the plate of the most internal blade of the two couples of blades goes through the wall of the intermediate cover pin, through a groove of said wall.

[0015] At least one of the blades of each end group of blades has, from the surface pointing to the area resting on the piece of furniture, a threaded hole, wherein a screw

can be threaded, whose head or external end is left outside the hole to define a support for the blade on the piece of furniture which said blade faces, being the projecting part of the screw adjustable, by turning said screw in one direction or another. The threaded hole can be drilled on the corresponding blade, on the surface facing the furniture to be joined, in the nucleus or intermediate arm joining the plate and the ring of each blade.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] In the attached drawings there is an example of an embodiment which will help understand better the constitution and characteristics of the hinge.

In the drawings:

[0017] Figure 1 is a perspective view of a hinge constituted according to the invention.
[0018] Figure 2 is a perspective view of the superior end of the hinge, seen at 180° with respect to figure 1.
[0019] Figure 3 is a perspective exploded view of the superior end of the hinge of figure 2.
[0020] Figure 4 is a similar view to figure 3, but seen at 180°.
[0021] Figure 5 is an upper plan of the hinge of figure 1, with the plates of the blades in coplanar position.

DETAILED DESCRIPTION OF AN EMBODIMENT

[0022] The hinge represented in figure 1 comprises a profile or cover pin 1 and two couples of end blades, indicated with the reference numbers 2 and 3, which remain distant one from the other and restrained from axially moving with respect to the cover pin 1.
[0023] As it can be seen better in figures 3 and 4, each couple of blades comprises an external blade 4 and an internal blade 5. The external blade 4 consists of a ring 6, a plate 7, and an intermediate arm 8. Likewise, the internal plate 5 consists of a ring 9, a plate 10, and a nucleus or intermediate arm 11.
[0024] The blades 4 and 5 are connected through an axis 12 inserted through the rings 6 and 9. The ring 6, corresponding to the more external blade 4, has a slanted segment 13 in its inner passage. In the same way, the axis 12 has, in the portion inserted in the ring 6, a slanted segment 14 matching the segment 13. Thus, when the axis 12 is inserted through the rings 6 and 9, the ring 6 is restrained from rotation with respect to axis 12.
[0025] Between the rings 6 and 9 and also between the ring 9 and the cover pin 1, there are auxiliary rings 15, made of for example nylon, to soften and quiet the relative rotation between the different components.
[0026] As it can be seen in figures 3 and 4, the nucleus or intermediate arms 8 and 11 are quite longer than the rings 6 and 9, protruding inferiorly with respect to said rings in portions in which the plates 7 and 10 are located, and therefore, said plates are axially offset from the corresponding rings towards the centre of the cover profile 1.
[0027] The nucleus or intermediate arm 11 goes through the wall of the intermediate cover pin 1 through an axial groove 16 that said pin bears in its external edges.
[0028] The axis 12 has at its lower end a little widening or head 17 acting as a stop to prevent the separation of the different rings. This axis is retained in the rings through friction, especially by the adjusted penetration of the upper slanted section 14 in ring the 6.
[0029] With the aforementioned constitution, when mounting the groups of blades on the cover pin 1, the ring 9 of the most internal blade, as well as the intermediate rings 15 are housed in the cover profile, protruding from said profile only the ring 6 of the more external blade 4, being said ring covered by the trim caps 18, the most external of them being interchangeable to adapt its finishing coat and color to that of the intermediate pin 1, as shown in figures 1 and 2.
[0030] The nucleus or intermediate arm 11 of the most internal blade 5 also extends over the corresponding ring 9, in a section whose height is the same as that of the intermediate superior ring 15 and to that of ring 6 of the upper blade 4, when all the ensemble is coupled in such a way that both arms 8 and 11 are left with the upper and lower ends located at the same height, as it can be seen in figures 1 and 2.
[0031] As shown in figures 3 and 4, each one of the plates 7 and 10 have three holes, two round intermediate holes, indicated with the reference number 19, and an oblong one indicated with the reference number 20, parallel to the axis of the hinge and located next to the edge of the plate, leading to an outlet 21 which is wide enough to allow the passage of the nucleus or body of a binding screw. This layout allows a quick interlocking or mounting of the blades, since inserting the screw through the hole 20 without fastening it completely will be enough for fixing the hinge to the doors or pieces of furniture. After inserting the screw, the blade is fixed, embracing and making the outlet 21 go through the body or nucleus of the screw until it reaches the oblong hole 20. Moreover, the fact that this hole is oblong allows for a final regulation of the position of the blades, enabling to correct height differences between the doors connected by the hinge.
[0032] Furthermore, the head of the binding screws inserted through the holes 19 and 20 can be covered by a trim cap 23.
[0033] As shown in figure 2, as the plates 7 and 10 of the two couples of blades are offset towards the centre of the cover pin 1, it is possible to release the thickness of the lid and plank from the structure of the piece of furniture, avoiding that said plates collide against the lid or the plank.
[0034] As shown in figure 5, when the plates 7 and 10 of each couple of blades are in coplanar position, they are located to a distance d from the axis of rotation 12 which is bigger than the radius R of the cover profile 1 and cap 18, which are characteristics of the blade of the

utility model 1030929.

[0035] With the arrangement described, in each couple of blades, the most external blade 4 is restrained from rotation with respect to the axis 12, thanks to the flat matching segments 13 and 14 of the ring 6 and axis 12. Likewise, the most internal blade 5 is restrained from rotation with respect to the cover pin when the arm or nucleus 11 of said blade passes through the groove 16 of the wall of the cover pin 1.

[0036] The oblong hole 20 with its outlet 21 allows for the quick interlocking or positioning of the blades on doors or furniture components whereunto the hinge is mounted, as well as the adjustment or regulation of the position, before threading in the holes through holes 19.

[0037] The hinge of the invention can also include in at least one of the blades of each group of blades and from the surface pointing to the area resting on the piece of furniture, a threaded hole for a screw (24), figure 2, whose head or external extreme serves as a support element on the piece of furniture which said blade faces. This screw offers the possibility of correcting gaps or separations between the elements connected by the hinge and the piece of furniture.

Claims

1. Furniture hinge comprising an axis whereupon two or more couples of independent blades are mounted, axially distant between one another and restrained from moving along said axis, each one of these blades consisting of a flat plate with holes for the passage of binding screws, and a ring with an axis parallel to the plate and distant thereof by a distance which is bigger than the external radius of the ring, being the ring and plate joined by a nucleus or intermediate arm, **characterized in that** the couples of blades are mounted on independent aligned axes, materialized in other nucleus or bolts, and separated by an intermediate cover pin in which the ring of the internal blade of each couple of blades is housed, thus, the ring of the external blade being restrained from rotation with respect to its corresponding axis in at least one of the couples of blades, and the ring of the internal blade being restrained from rotation with respect to the cover pin.

2. Hinge according to claim 1, **characterized in that** in each couple of blades the plate of the two blades is axially offset towards the centre of the cover pin with respect to the middle cross sectional plane of the corresponding ring.

3. Hinge according to claim 1, **characterized in that** one of the holes of the plates for the passage of the binding screws is oblong, is located next to the edge parallel to the axis of the corresponding ring and leading to said edge through a central outlet, whereby the rod of the corresponding screw passes through.

4. Hinge according to claim 1, **characterized in that** the ring of the external blade of the couple of blades is outside the cover pin and it is covered by an interchangeable cap with the same diameter as said pin.

5. Hinge according to claim 1, **characterized in that** the ring of the external blade of each couple of blades and the section of the axis which is housed in said ring have flat matching segments which prevent the relative rotation between both components.

6. Hinge according to claim 1, **characterized in that** the arm or nucleus which joins together the ring and the most internal blade plate of the two couples of blades, goes through the wall of the intermediate cover pin through a groove in said wall, on its free edges preventing the relative rotation between said internal blade and the cover pin.

7. Hinge according to claim 1, **characterized in that** it comprises an axis on which at least two couples of blades which can rotate are mounted, axially distant from one another and restrained from moving along said axis, each one of its blades comprising a flat plate parallel to the axis of rotation and at least one ring with an axis parallel to the plate and distant from that plate by a distance bigger than the external radius of the ring, being the ring and plate joined together by a nucleus or intermediate arm, **characterized in that** at least one of the blades of each end group of blades bears, from the surface pointing to the area resting on the piece of furniture, a threaded hole whereby a screw can be threaded, whose head or external end is left outside the hole to define a support for the blade on the piece of furniture which said blade faces, being the projecting part of the screw adjustable by turning it one direction or another.

8. Hinge according to claim 7, **characterized in that** the threaded hole is drilled in the corresponding blade, on the surface facing the piece of furniture to be articulate, in the nucleus or intermediate arm joining the plate and the ring of each blade.

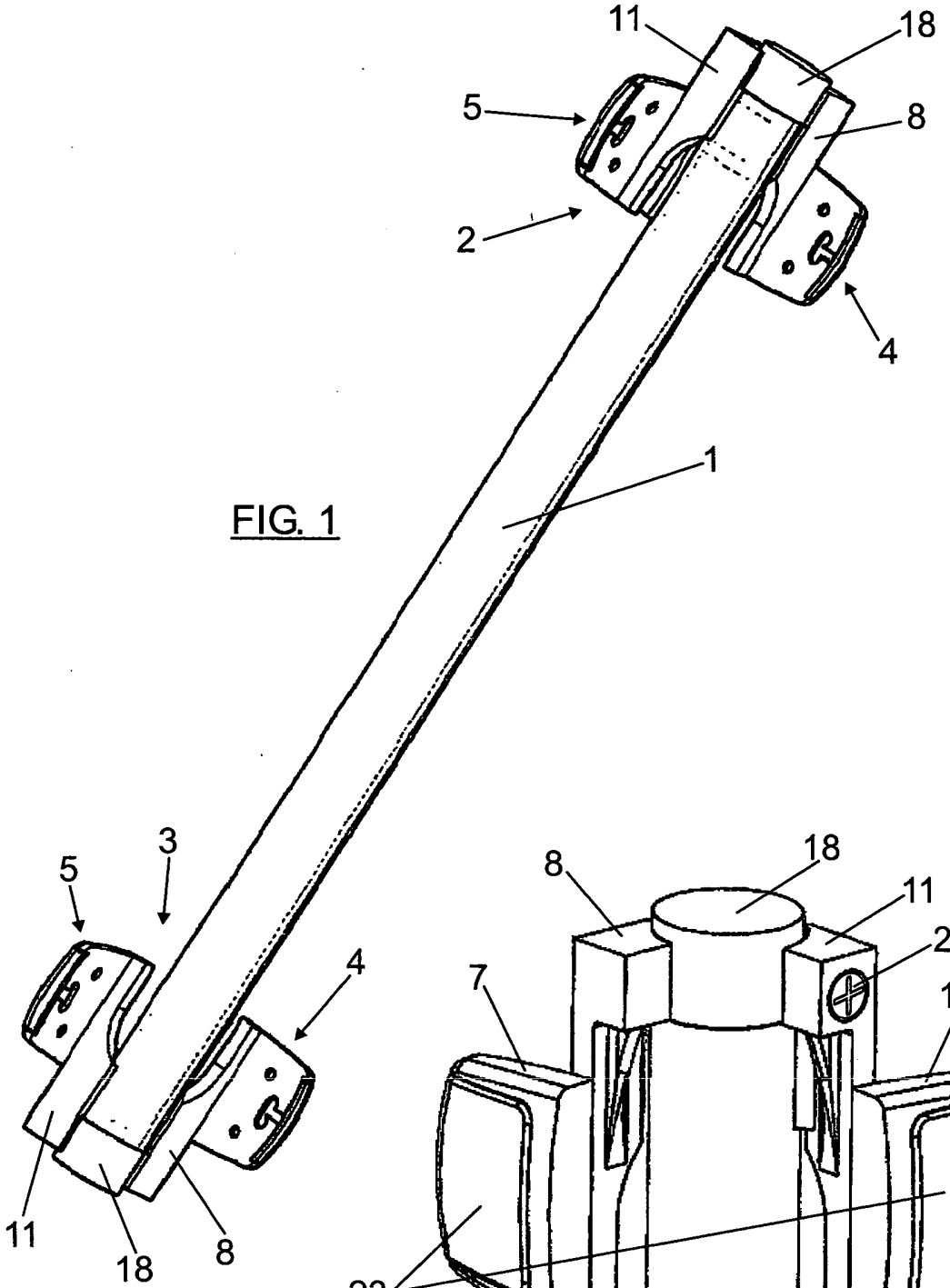

FIG. 1

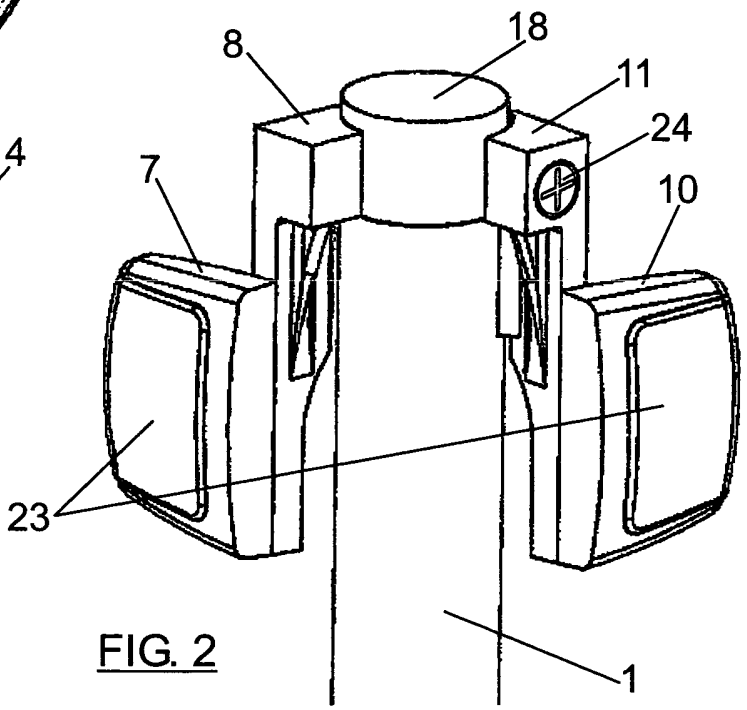

FIG. 2

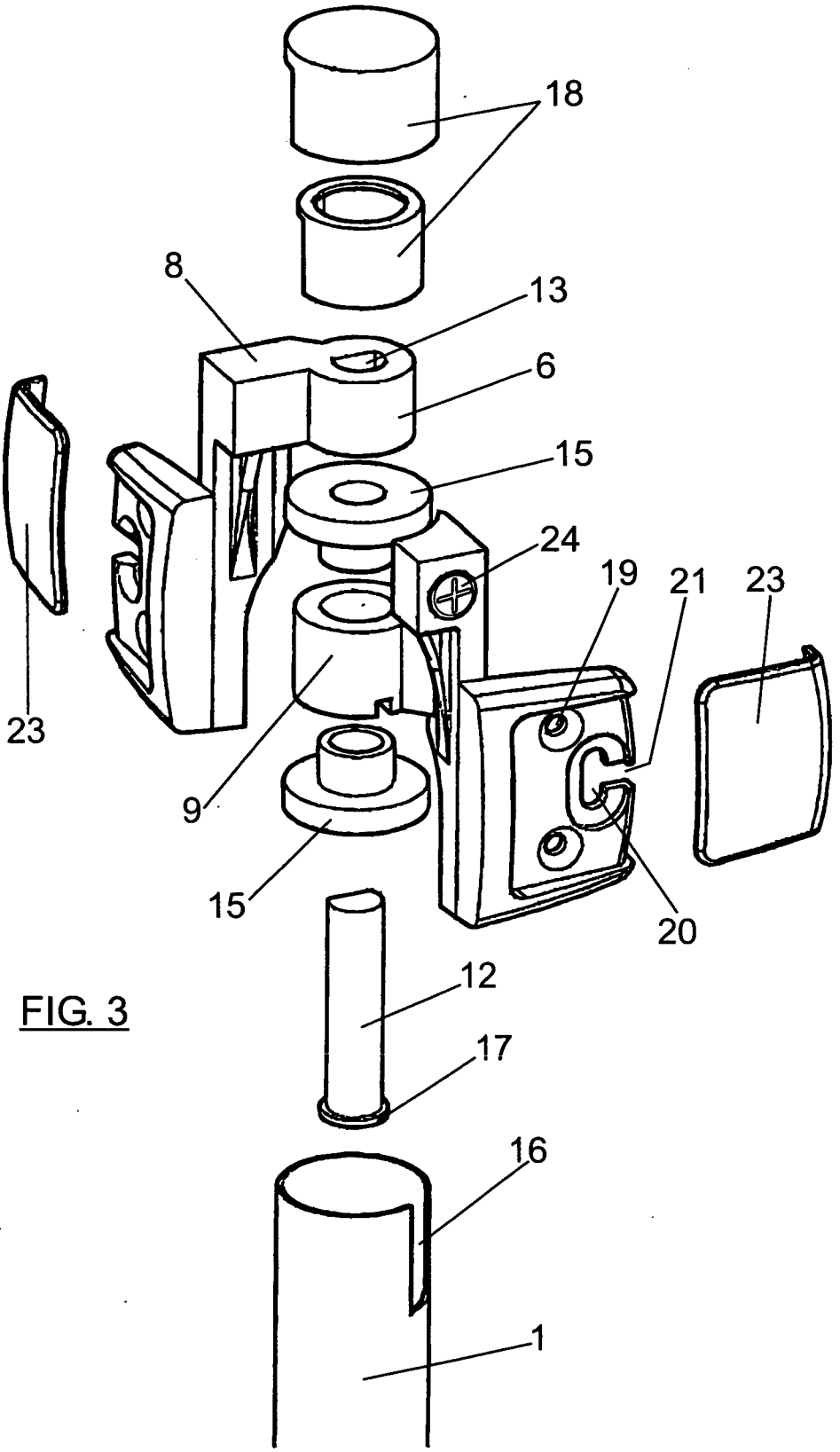

FIG. 3

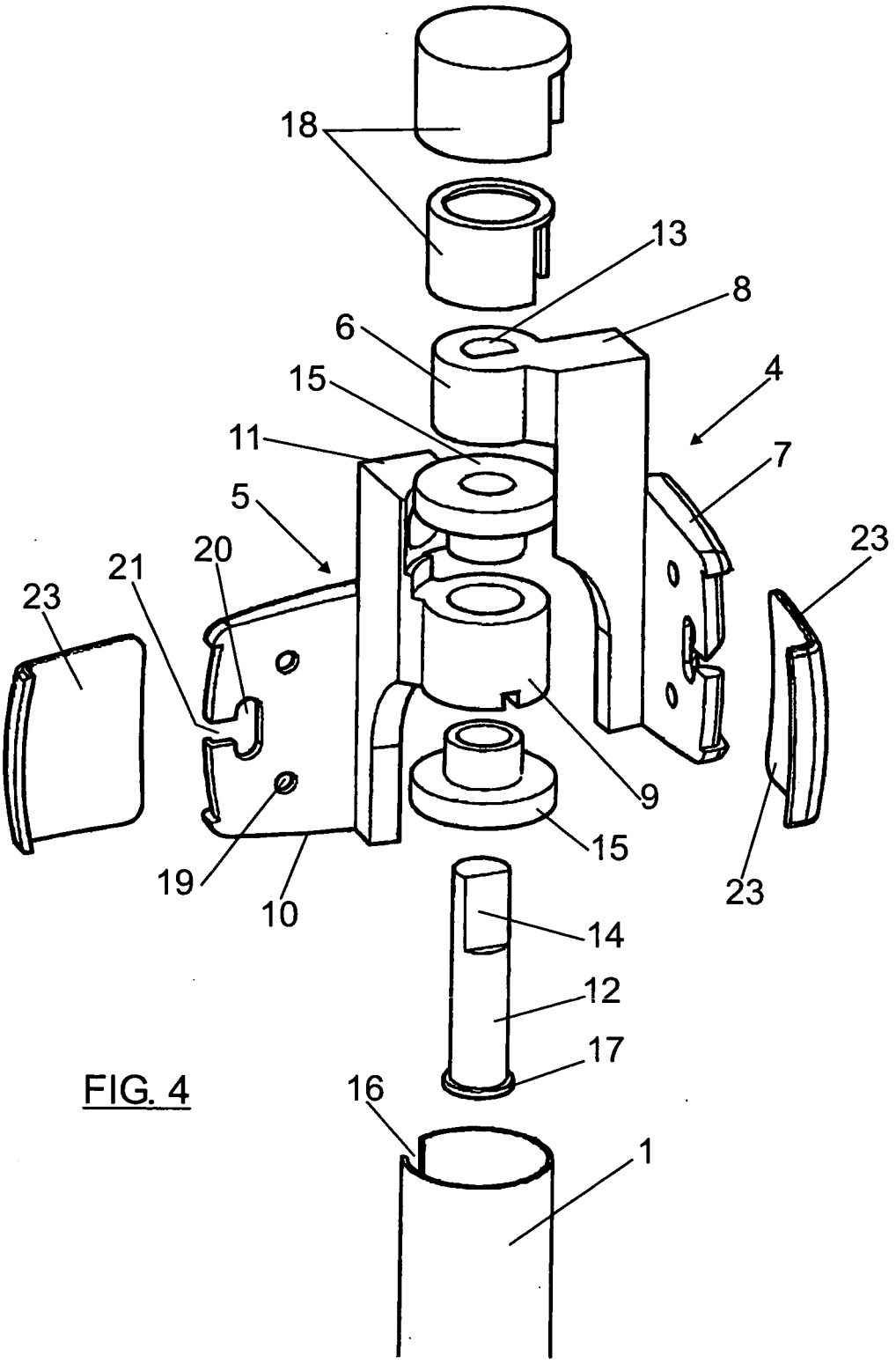

FIG. 4

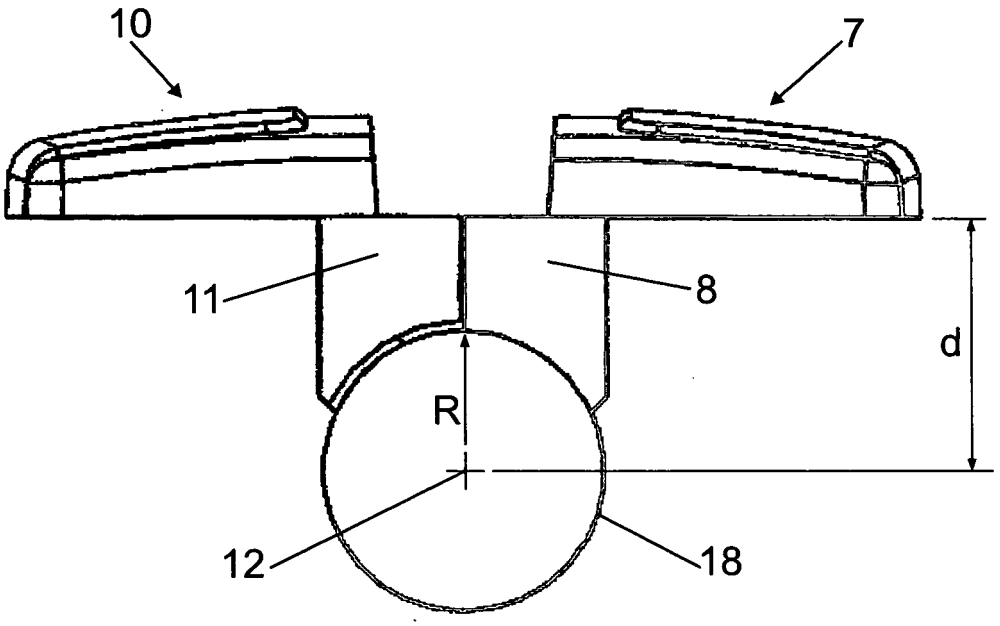

FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES 2007/000563

A. CLASSIFICATION OF SUBJECT MATTER

E05D 3/02 (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)
E05D+

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)

CIBEPAT, EPODOC, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FR 2864983 A1 (SAFENICE) 15.07.2005, the whole document.	1-6
Y	WO 2005054695 A1 (NHK SPRING CO LTD ; KITAMURA YOSHIHARU ; SAITO MAKOTO ;) 16.06.2005, abstract; figures.	1-6
A	EP 0151361 A2 (SOFISEB SA) 14.08.1985, abstract; figure 1.	1
A	FR 2618178 A1 (RATTI SILVIO SAS) 20.01.1989, abstract; figure 6.	1
A	ES 1030929 U (MARTINEZ ESCRIBANO FABIAN ; MARTINEZ GARCIA FABIAN ALEJO; MARTINEZ) 01.11.1995, the whole document.	1
A	US 2004034966 A1 (WEGMAN et al.) 26.02.2004, figures.	3

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
31 January 2008 (31.01.2008)	(08/02/2008)
Name and mailing address of the ISA/ O.E.P.M. Paseo de la Castellana, 75 28071 Madrid, España. Facsimile No. 34 91 3495304	Authorized officer M. del Carmen Hernando Martín Telephone No. +34 91 349 53 54

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES 2007/000563

C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1093274 A2 (STRAWBERRY CORP KK) 18.04.2001, abstract; figure 2.	
A	FR 2836175 A1 (GELIN MICHEL) 22.08.2003, abstract; figures.	
A	US 5894633 A (KANEKO et al.) 20.04.1999, abstract; figures.	
A	EP 0719901 A1 (SKF INDUSTRIE S.p.A.) 03.07.1996, abstract; figures.	1

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/ ES 2007/000563

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
WO 2005054695 A	16.06.2005	JP 2005163965 A	23.06.2005
		CN 1890472 A	03.01.2007
		EP 1830078 A	05.09.2007
		EP 20040819769	22.11.2004
		US 2007266524 A	22.11.2007
EP 0151361 A	14.08.1985	DE 8336637 U	29.03.1984
		EP 19840402651	19.12.1984
		AT 32470 T	15.02.1988
		DE 3469307 D	17.03.1988
FR 2618178 A	20.01.1989	IT 1222021 B	31.08.1990
US 2004034966 A	26.02.2004	NONE	----------
EP 1093274 A	18.04.2001	EP 20000119328	07.09.2000
		KR 20010050892 A	25.06.2001
		JP 2001185868 A	06.07.2001
		JP 3602389 B	15.12.2004
		US 6633643 B	14.10.2003
		DE 60020049 D	16.06.2005
		HK 1036715 A	16.12.2005
FR 2836175 A	22.08.2003	NONE	----------
US 5894633 A	20.04.1999	JP 9196048 A	29.07.1997
		KR 200141786 Y	01.06.1999
EP 0719901 A	03.07.1996	ITTO 940983	03.06.1996
		IT 1267180 B	28.01.1997
		DE 69516103 D	11.05.2000
		DE 69516103 T	09.11.2000
FR 2864983 A	15.07.2005	NONE	
ES 1030929 U	01.11.1995	ES 1030929 Y	01.04.1996

Form PCT/ISA/210 (patent family annex) (April 2007)