(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 079 194 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
26.10.2022 Bulletin 2022/43

(21) Application number: **22382219.8**

(22) Date of filing: **09.03.2022**

(51) International Patent Classification (IPC):
A47C 13/00 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
A47C 13/005

(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:
KH MA MD TN

(30) Priority: **20.04.2021 ES 202130810 U**

(71) Applicant: **Fama Sofas, S.L.U.**
30510 Yecla (Murcia) (ES)

(72) Inventor: **Lopez Gil, Felix**
30510 Yecla (ES)

(74) Representative: **Ballester Cañizares, Rosalia**
Ballester Intellectual Property SLP
Avda. de la Constitución 16, 1º D
03002 Alicante (ES)

(54) **CONNECTING DEVICE FOR ANCHORING SEAT MODULES**

(57) Connecting device (1) for anchoring seat modules, wherein said connecting device (1) comprises an arm (2) and a pivot (3) comprising a cylindrical shape comprising a serrated side area wherein the teeth of the slot (7) and the pivot (3) are configured to block the extraction of the pivot (3) and wherein the pivot (3) is configured to be extracted from the slot (7) of the arm (2), moving said pivot (3) with respect to the arm (2) in a longitudinal direction, perpendicular to the transverse plane.

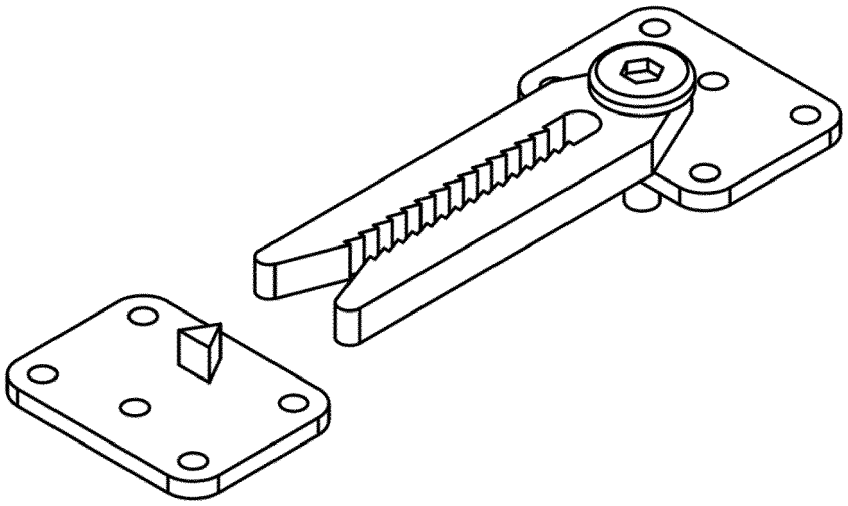

FIG.1

EP 4 079 194 A1

Description

OBJECT OF THE INVENTION

[0001] The following invention relates to a device for anchoring or connecting modules or parts of furniture elements, for the purpose of being able to form furniture based on the assembly of modules, according to the tastes and needs of the user. In this way, the connecting device allows a module to be connected to the side of another one, regardless of the direction of the connection.

[0002] Therefore, the purpose of the device is to connect different independent furniture modules to form a single assembled item of furniture, such that said device allows the modules to be anchored together by bringing the modules together laterally, or in a frontal direction.

[0003] The invention falls within the technical field of the furniture sector, and more specifically in the sector of systems and devices for joining parts and modules of the same item of furniture.

BACKGROUND OF THE INVENTION

[0004] At present, various furniture elements that are currently on the market, are known, among which those with a modular structure, in other words, those made up of independent parts attached together by means of rigid, articulated, fixed or detachable anchoring devices, these devices being connected to the frames of said different elements or independent modules of the furniture, are worth noting.

[0005] Among these existing anchoring devices, those known as ratchet devices, which normally allow two modules of an item of furniture to be anchored together by bringing said modules together laterally by inserting two complementary parts of said devices, stand out.

[0006] These devices currently on the market usually comprise an end comprising a serrated slot open at one end, wherein said end is configured to be attached to a module of an item of furniture, normally to a lower side part of the frame of said module, by means of a metal plate or something similar, and another plate configured to be connected to another module, wherein said plate comprises a protrusion or rigid tip, of a triangular prismatic shape, said tip being configured to be inserted laterally into the serrated slot of the end. This configuration of the teeth prevents the tip, once this tip has been inserted into the slot, from being extracted by moving the modules laterally in a separating direction, it being necessary to lift them in a longitudinal direction, perpendicular to the direction of the insertion.

[0007] One of the main disadvantages of this system is that the insertion of the tip into the slot of the end must be performed in a lateral displacement of the modules to be anchored, the opening of the slot facing the triangular prismatic tip frontally, which can be a problem if there is not enough space to perform this displacement, which tends to be common in the rooms of many buildings. In other words, existing systems do not allow the parts of the device to be connected when a module is moved in a direction other than bringing the modules together laterally, which could affect the state of the components in the event of coupling in a different direction.

[0008] As can be seen in figure 1, a connecting device like those currently on the market is shown, wherein the triangular prismatic-shaped protrusion or tip can easily be seen, as well as the serrated slot of the end. These components allow the tip to only be inserted into the slot in a frontal direction with respect thereto, in order to achieve a correct anchorage, since if it were performed in another direction, whereby the tip is not inserted into the slot frontally, said triangular prismatic tip would not be properly attached to the slot of the end, but would be inclined, without achieving the desired anchorage.

DESCRIPTION OF THE INVENTION

[0009] In order to achieve the objectives and avoid the disadvantage mentioned in the previous paragraphs, the invention proposes a device, known as a ratchet device, for anchoring or connecting the modules of a seat.

[0010] Said connecting device configured to anchor seat modules comprises:

- an arm configured to be connected by a first end, by means of a joint articulated with respect to an axis, to a first module, wherein said arm comprises a serrated slot, open at a second end;

- a pivot configured to be attached to a second module;

wherein the pivot comprises a cylindrical shape comprising a serrated side area; wherein the arm and the pivot are configured to be assembled by inserting the serrated side area of the pivot into the open serrated slot of the arm, moving towards each other in a direction of approach in a transverse plane, wherein the teeth of the slot and the pivot are configured to block the extraction of the pivot from the slot of the arm when it is moved in a direction of approach in a transverse plane; and wherein the pivot is configured to be extracted from the slot of the arm by moving said pivot, with respect to the arm, in a longitudinal direction, perpendicular to the transverse plane.

[0011] In this way and with these characteristics, the problem mentioned in the background is solved, it being possible to assemble two modules of an item of furniture, in any direction of approach, not only laterally, since the cylindrical shape of the pivot allows the slot to anchor to said pivot regardless of the direction of insertion. In other words, since the device has an articulated joint and the pivot has a cylindrical serrated area, this means that the attachment between the modules does not need to be lateral, like the one mentioned in the state of the art.

[0012] The fact that the arm is connected by means of

an articulated joint with respect to an axis means that said arm can only rotate with respect to a single longitudinal axis, perpendicular to the transverse plane, such that the arm, and therefore the slot, cannot be inclined with respect to the plane in which they are moved to achieve anchorage. In other words, the articulation is configured to orient the slot of the arm towards the pivot, depending on the direction of approach when anchoring occurs.

[0013] Preferably, the arm with the open serrated slot has a flat "U" shape, the direction of the serrated teeth being oriented in a longitudinal direction, in the same direction as the axis of the articulation. Said shape is very well suited for the functionality described.

[0014] In one embodiment, the connecting device comprises a first screw configured to connect, by means of the articulated joint, the arm to the first module, wherein said first screw is configured to pass through a through-hole located at the first end of said arm and be screwed to the first module, the first screw being oriented in a longitudinal direction, perpendicular to the transverse plane. In other words, with this configuration, the screw not only achieves the attachment to the module, but also allows articulation with respect to the longitudinal axis of the arm to said module.

[0015] In one embodiment, the connecting device comprises a single second screw configured to connect the pivot to the second module of the seat, wherein said second screw is configured to pass through a through-hole located in a longitudinal axis of the pivot and to be screwed to the second module, said second screw being oriented in a longitudinal direction, perpendicular to the transverse plane. In this embodiment, only one screw is required to fix the pivot, unlike the system shown in the background, so that this screw allows the pivot to remain in the longitudinal orientation at all times, being able to rotate on itself or remain completely immobile.

[0016] In one embodiment, the connecting device comprises a support piece configured to be positioned between the arm, to which it is connected by means of an articulated joint, and the first module, to which it is connected by means of a rigid joint when said arm connects to said first module. This support piece facilitates the rotation of the arm with respect to the module it is connected to, maintaining the orientation in the transverse plane of said arm.

[0017] In one embodiment, the support piece comprises a first and a second stop configured to limit the rotation of the arm with respect to said support piece. Preferably, said stops limit the rotation of the arm between 45 and 90° in the transverse plane, with respect to a lateral direction of anchorage, in such a way that said stops allow the arm to be positioned between two possible extremes:

- At an inclination of 90° to be able to connect the two modules by pushing laterally (which is how those currently on the market work)
- Positioning the arm at 45° to be able to connect the two modules by pushing them from front to back. This 45° inclination is determined by the position of the arm and the pivot with respect to the modules.

[0018] To facilitate the connection of the connecting device, it is appropriate that the arm has an asymmetrical design, one end of which being longer than the other, with a concave shape intended to engage the pivot when it is moved from front to back.

[0019] In one embodiment, the serrated slot of the arm is open at the second end of said arm by means of an opening comprising at least one rounded or chamfered side, configured to orient and guide the arm with respect to the pivot when the components of the device are brought together, above all when such a bringing together is not performed by means of lateral displacement.

[0020] In a preferred embodiment, the serrated slot of the arm comprises an increasing width from the second towards a first end. In this way, the arm being made of a material which allows slight elastic deformation, the grip produced between said arm and the pivot is increased when it comprises lateral clamping.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] In order to supplement the description given below, and to help with a better understanding of the characteristics of the invention, this descriptive report is accompanied by a set of drawings, the figures of which represent, for illustrative and non-limiting purposes, the most characteristic details of the invention.

Figure 1. Shows a perspective view of an existing connecting device in the state of the art in which a triangular prismatic-shaped protrusion or tip can be seen, which only allows the slot of the end to be inserted in a frontal direction to achieve a correct anchorage.

Figure 2. Shows a perspective view of a connecting device described herein, in which an arm configured to be connected to a module by means of a first screw, and a cylindrical-shaped pivot comprising a serrated side area, can be seen.

Figure 3a. Shows a plan view of the connecting device described herein, showing the initial position of the arm and the pivot for anchoring the modules to which they are attached. In this case, said anchoring is achieved by moving said modules in a lateral direction within the transverse plane, in other words, with the arm at an inclination of 90°, with the opening of the arm slot facing the pivot frontally and said slot comprising the same direction as the movement of the modules, indicated by the arrow.

Figure 3b. Shows a plan view of the connecting device like the one described in figure 3a, showing the

final position of the arm and the pivot once the anchoring of the modules to which they are attached has been achieved, said anchoring having been achieved by moving the modules laterally.

Figure 4a. Shows a plan view of the connecting device described herein, showing the initial position of the arm and the pivot for anchoring the modules (not shown) to which said elements can be attached. In this case, said anchoring is achieved by moving said modules in a frontal direction within the transverse plane, in other words, as indicated by the arrow, the arm being inclined at 45° with respect to the support, it being possible for the modules to be in a laterally attached position, requiring the arm to incline with respect to the direction of movement so that the opening of the slot faces the pivot.

Figure 4b. Shows a plan view of the connecting device like the one described in figure 4a, showing the intermediate position of the arm and the pivot once the modules to which they are attached have been anchored, said anchoring having been achieved by moving the modules in a frontal direction, perpendicular to the displacement shown in figures 3a and 3b.

Figure 5a. Shows a lower plan view of two seat modules arranged to be connected by means of the connecting device by moving one of said modules in a frontal direction within the transverse plane with respect to the second one, as shown in figure 4a, wherein the serrated slot of the arm is oriented towards the position of the pivot.

Figure 5b. Shows a lower plan view of two seat modules, similar to the one shown in figure 5a, wherein both modules have been assembled and aligned using the connecting device.

Figure 5c. Shows a lower plan view of two seat modules like the one shown in figures 5a and 5c, wherein one of the modules has been moved vertically, in other words, in a longitudinal direction, perpendicular to the transverse plane with respect to the other, in order to disconnect them by disassembling the components of the connecting device.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0022] According to the numbering adopted in the figures, the connecting device (1) comprises an arm (2) configured to be connected, by means of a flat articulated joint, to a pivot (3) that has a cylindrical shape with a serrated side area configured to be attached to a second module of the same seat by means of a rigid joint or an articulated joint that can only allow the pivot (3) to rotate on itself, in other words, with respect to the axis that defines its cylindrical shape.

[0023] The arm (2) has the shape of a flat rectangular prismatic bar, and comprises an open slot (7), oriented in the same longitudinal direction as said prismatic bar, preferably giving the arm a "U" shape, such that said slot (7) is serrated along its length with teeth oriented in a direction perpendicular to the direction of the slot. Preferably, said serrated slot (7) comprises an increasing width from the second towards the first end. In other words, it has a smaller width at the inlet than at the opposite end of the slot (7), which favours the tightening of the slot (7) with respect to the pivot (3) when they are connected.

[0024] This connecting device (1) works as shown in figures 3a-3b and 4a-4b, depending on the direction of approach of the arm (2) with respect to the pivot (3) or vice versa, in other words, of the pivot (3) with respect to the arm (2).

[0025] As shown in figures 3a-3b, the modules of a seat can be anchored by means of this connecting device (1) by moving said modules in a lateral direction, such that the slot (7) of the arm (2) is arranged so that it is oriented in the same direction as the displacement experienced by said modules, indicated by the arrow. In this way, as shown in figure 3b, the pivot (3) can be easily inserted into the slot (7) due to the fact that the orientation of the teeth of said elements allows it, but once inserted, it cannot be extracted by moving the modules in a direction of separation, said direction of separation being in the same plane. In order to achieve said separation or uncoupling, it is necessary to move one of the elements in a vertical direction, perpendicular to the slot (7), in other words, in the direction of the teeth of the slot (7).

[0026] On the other hand, this connecting device (1) allows the arm (2) to be anchored or connected to the pivot (3), even when the direction of insertion of the pivot (3) into the slot (7) is not the same as the direction of displacement of the modules to which said arm (2) or pivot (3) is attached.

[0027] To this end, the arm (2) is connected to the module by means of an articulated joint with respect to an axis perpendicular to the transverse plane that allows the arm (2) to rotate. Said articulated joint may comprise a single first screw (4), such that the arm (2) is directly connected to the module, or the device (1) may comprise a support piece (6) located between the arm (2) and the module, which may also be attached to the module by means of said first screw (4), or may be attached by means of other screws that ensure the rigid assembly of the support (6) of the connecting device (1), allowing the first screw (4) to maintain the articulation of the arm (2) with respect to the support. In this way, said first screw (4) allows the arm (2) to rotate sufficiently to focus, or orient, the opening of the slot (7) toward the pivot (3), as shown in figure 4a.

[0028] Figures 4a-4b shows an assembly of the components of the device (1) wherein the direction of approach of the pivot (3) with respect to the slot (7) of the

arm (2) is not lateral, but frontal, the modules being attached together but not aligned, as shown in figure 5a, but always in the same transverse plane. During said assembly, the arm (2) may rotate as the pivot (3) is inserted into the slot (7), an insertion that is possible thanks to the cylindrical serrated shape of the pivot (3) and the teeth of the slot (7).

[0029] With this configuration, the existing problems with connectors currently on the market, which require lateral space to enable them to be connected, such that, if there is no space, they cannot be connected properly, are solved.

[0030] In order for the arm (2) to only rotate between two possible inclinations with respect to the support (6), preventing it from being positioned in a direction unsuitable for its use, said support comprises a first and second stop configured to limit the rotation of the arm (2) to an inclination of 90°, as shown in figure 3a, to 45°, as shown in figure 4a or 5a.

[0031] Figures 5a-5c show how the connecting device (1) is used in two modules of a seat in order to connect them, both their connection and their separation, by moving one of the modules in a vertical direction, with respect to each other, as shown in figure 5c.

[0032] As indicated above, the pivot (3) may remain rigidly attached to the module to which it is connected, or may rotate on itself, depending on the adjustment of a second screw (5) used to connect said pivot (3) to said module.

[0033] The materials of the connecting device (1) must be sufficiently rigid to allow the use described and may be made of a metal such as steel or rigid plastic.

Claims

1. Connecting device (1) for anchoring seat modules, wherein said connecting device (1) comprises:

- an arm (2) configured to be connected at a first end, by means of an articulated joint with respect to an axis, to a first module, wherein said arm (2) comprises a serrated slot (7), open at a second end;
- a pivot (3) configured to be attached to a second module;

characterised in that the pivot (3) comprises a cylindrical shape comprising a serrated side area, wherein the arm (2) and the pivot (3) are configured to be assembled by inserting the serrated side area of the pivot (3) into the open serrated slot (7) of the arm (2) by moving them towards each other in a direction of approach in a transverse plane, wherein the teeth of the slot (7) and the pivot (3) are configured to block the extraction of the pivot (3) with respect to the slot (7) of the arm (2) when being moved in a direction of separation in the transverse plane; and wherein the pivot (3) is configured to be extracted from the slot (7) of the arm (2), by moving said pivot (3) with respect to the arm (2) in a longitudinal direction, perpendicular to the transverse plane.

2. Connecting device (1) according to the preceding claim comprising a first screw (4) configured to connect, by means of the articulated joint, the arm (2) to the first module, wherein said first screw (4) is configured to pass through a through-hole located at the first end of said arm (2) and to be screwed into the first module, the first screw (4) being oriented in a longitudinal direction, perpendicular to the transverse plane.

3. Connecting device (1) according to any of the preceding claims comprising a second screw (5) configured to connect the pivot (3) to the second module of the seat, wherein said second screw (5) is configured to pass through a through-hole located in a longitudinal axis of the pivot (3) and to be screwed into the second module, said second screw (5) being oriented in a longitudinal direction, perpendicular to the transverse plane.

4. Connecting device (1) according to any of the preceding claims comprising a support piece (6) configured to be positioned between the arm (2) and the first module when connecting said arm (2) to said first module, said support piece (6) being connected in an articulated manner with respect to the arm (2) and in a rigid manner with respect to the first module.

5. Connecting device (1) according to the preceding claim, wherein the support piece (6) comprises a first and second stop configured to limit the rotation of the arm (2) with respect to said support piece (6).

6. Connecting device (1) according to any of the preceding claims, wherein the serrated slot (7) of the arm (2) is open at a second end of said arm (2) by means of an opening comprising at least one rounded or chamfered side configured to orient and guide the pivot (3) into said slot (7).

7. Connecting device (1) according to any of the preceding claims, wherein the serrated slot (7) of the arm (2) comprises an increasing width from the second to the first end.

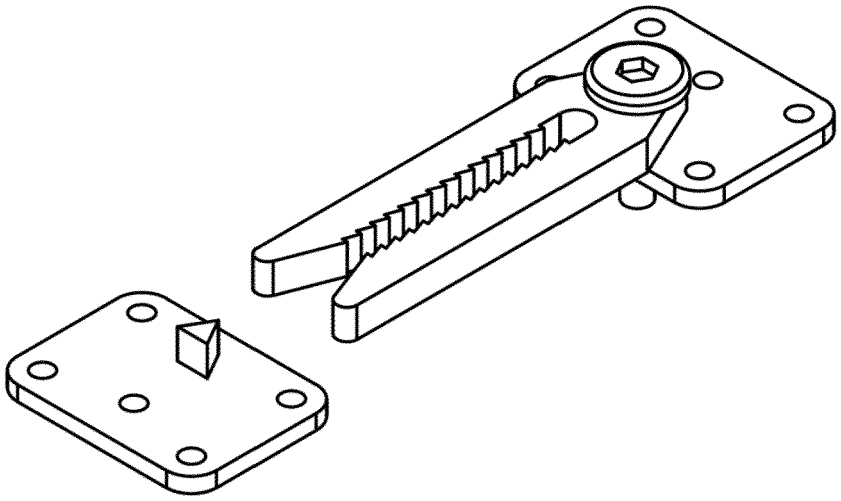

FIG.1

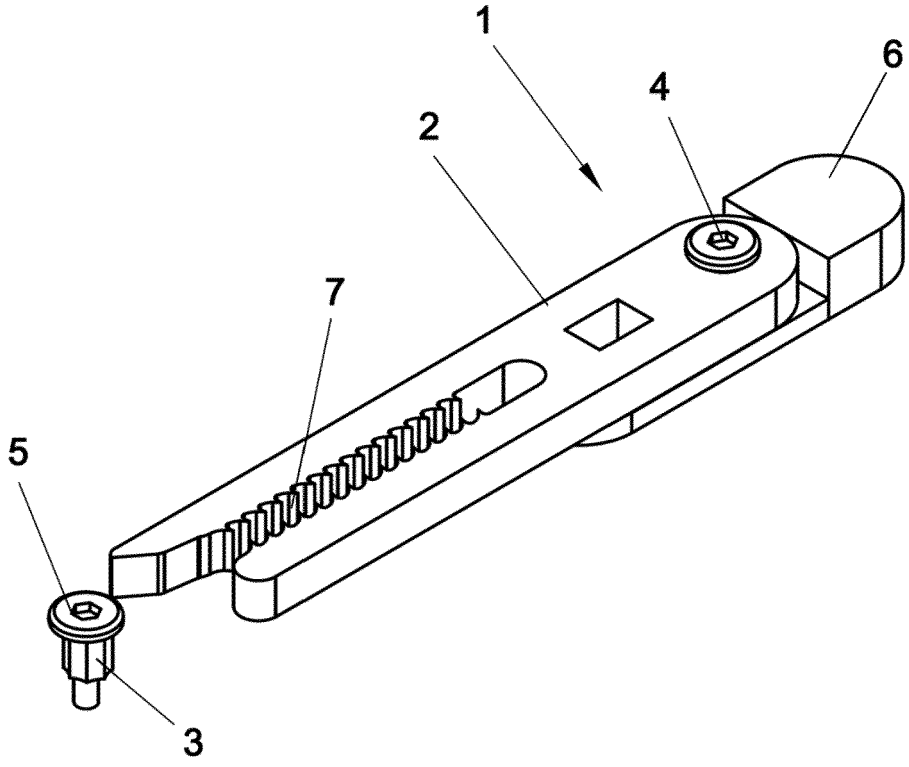

FIG.2

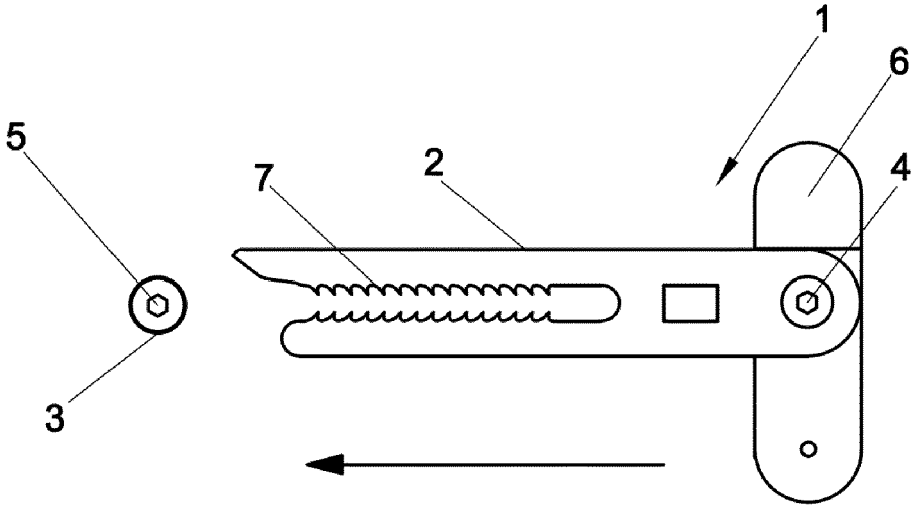

FIG.3a

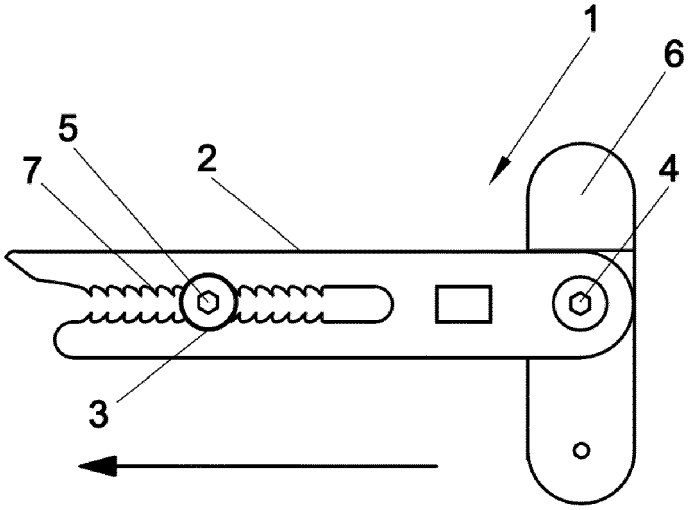

FIG.3b

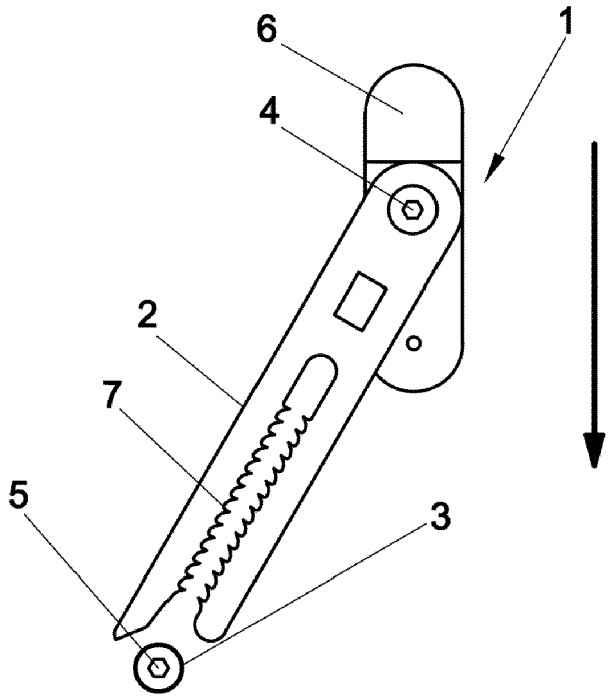

FIG.4a

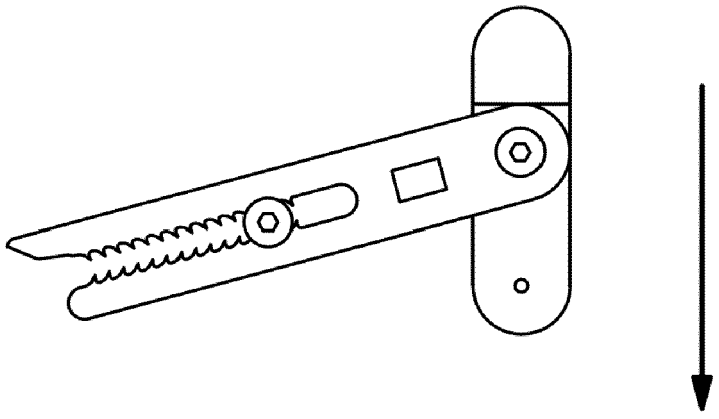

FIG.4b

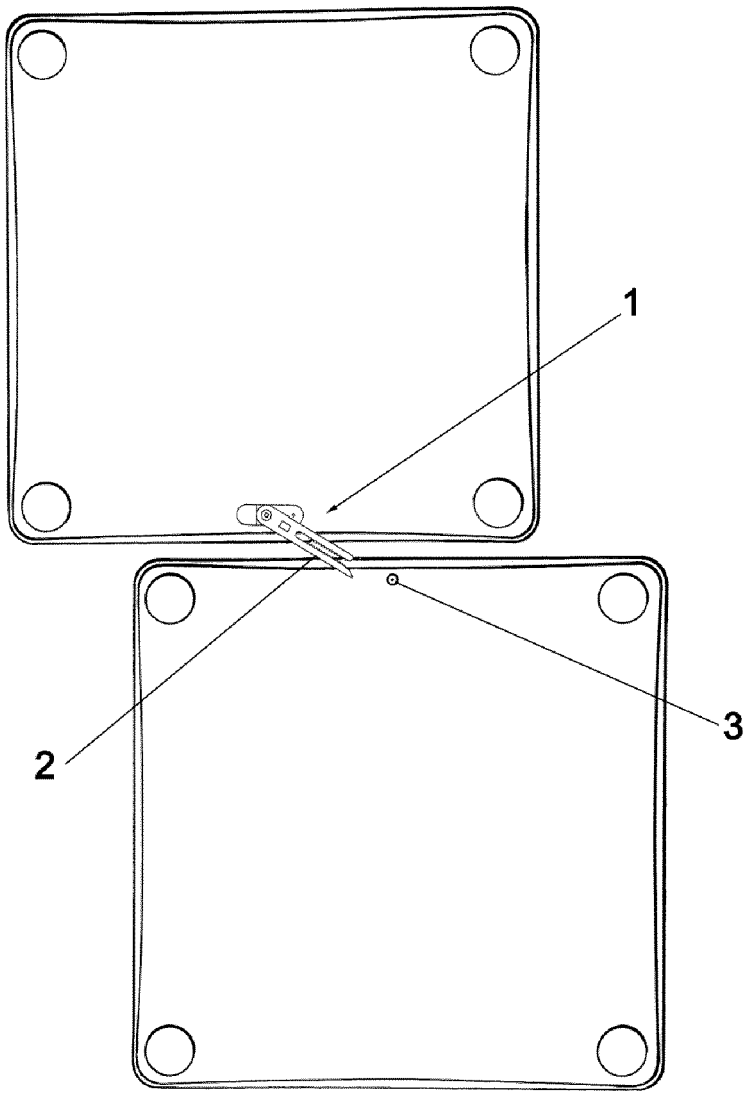

FIG.5a

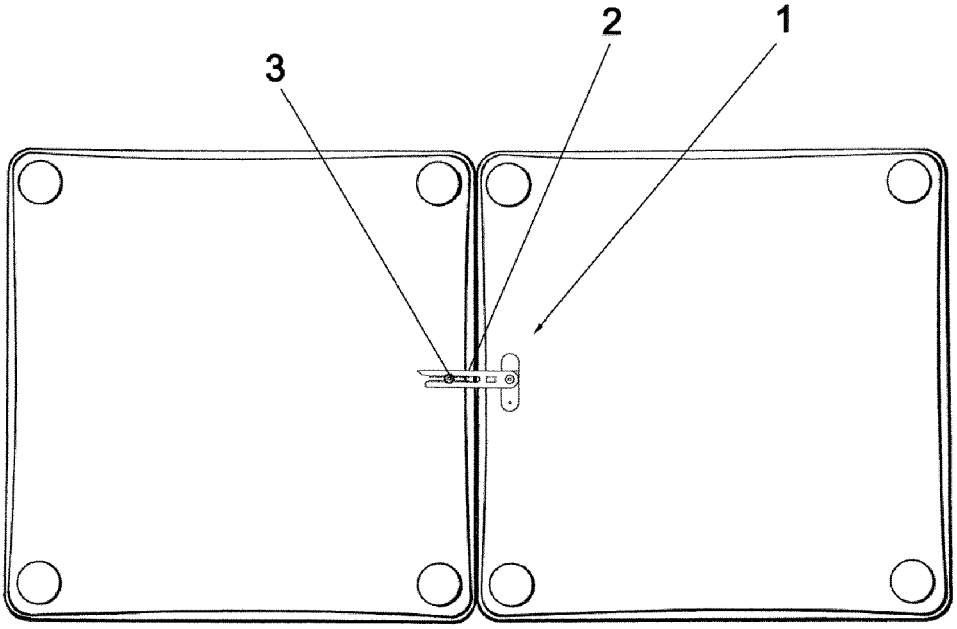

FIG.5b

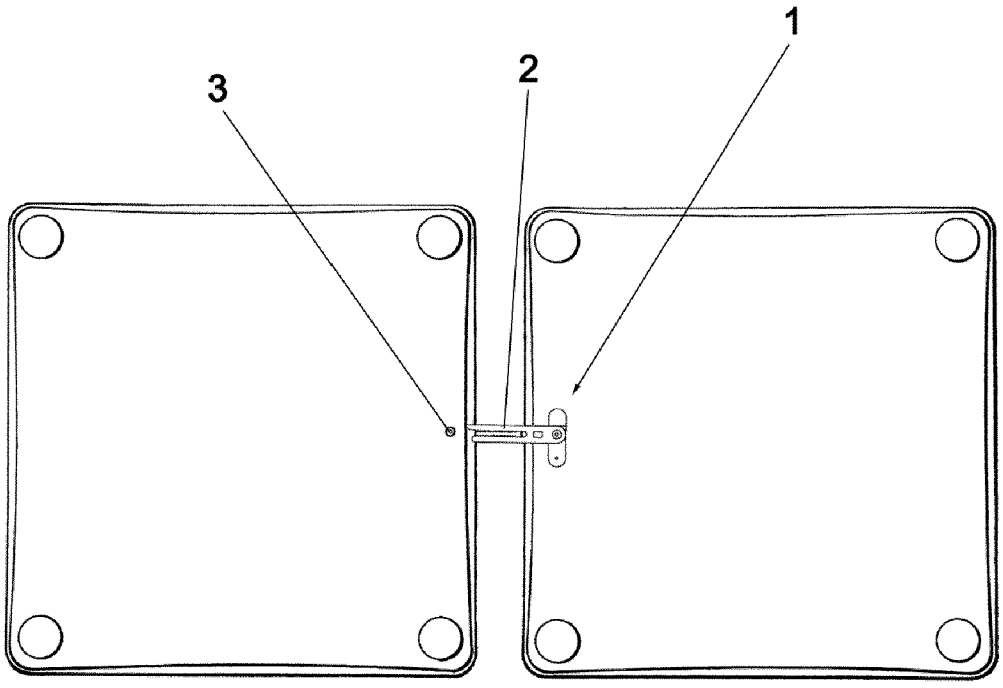

FIG.5c

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 22 38 2219

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 89 04 041 U1 (FERDINAND LUSCH GMBH & CO) 11 May 1989 (1989-05-11) * claim 1; figures * -----	1-7	INV. A47C13/00
A	KR 200 388 067 Y1 (UNKNOWN) 28 June 2005 (2005-06-28) * the whole document * -----	1-7	

TECHNICAL FIELDS SEARCHED (IPC)

A47C
A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	19 August 2022	Kis, Pál

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 22 38 2219

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.

19-08-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 8904041 U1	11-05-1989	DE 8904041 U1	11-05-1989
		ES 2020772 A6	16-09-1991
		IT 1238740 B	03-09-1993
KR 200388067 Y1	28-06-2005	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82