

(19)



(11)

EP 3 446 595 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
27.02.2019 Bulletin 2019/09

(51) Int Cl.:
A47B 95/02 ^(2006.01) **E05C 1/10** ^(2006.01)
E05C 1/16 ^(2006.01) **E05B 65/44** ^(2006.01)

(21) Application number: **18188173.1**

(22) Date of filing: **09.08.2018**

(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

(71) Applicant: **Polo S.r.l.**
56038 Ponsacco (PI) (IT)

(72) Inventor: **CIONI, Leonardo**
56038 Ponsacco (PI) (IT)

(74) Representative: **Baldi, Claudio**
Ing. Claudio Baldi S.r.l.
Viale Cavallotti, 13
60035 Jesi (Ancona) (IT)

(30) Priority: **24.08.2017 IT 201700095854**

(54) PIECE OF FURNITURE WITH RECESSED HANDLE PROVIDED WITH SLIDER

(57) A piece of furniture (100) comprises: a wall (1), a door panel (14), supporting and moving means of the door panel (14), a recessed handle (3) comprising a fixed frame (30) that is recessed in a housing (14c) of the door panel (14) and a slider (31) that is slidingly mounted in said fixed frame (30), fastening/unfastening means (2) to fasten/unfasten said door panel (14) to the wall (1);

said fastening/unfastening means (2) comprise a striker (22) suitable for being engaged inside a housing (21) of the wall (1) and connected to the slider (31), and retention means (23) connected to said striker (22) to push the striker (22) into the engaged position; the fixed frame (30) of the recessed handle (3) is flush with an ending edge of said door panel (14).

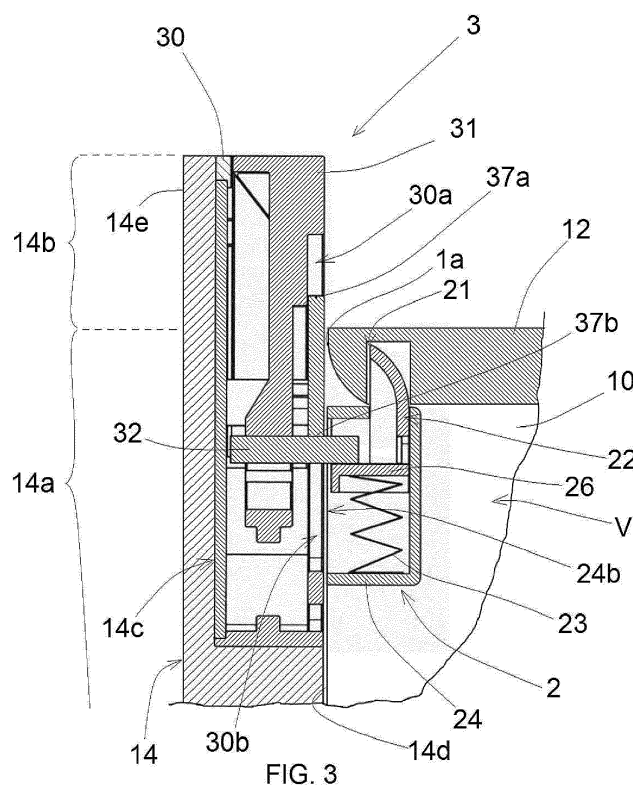


FIG. 3

EP 3 446 595 A1

Description

[0001] The present patent application for industrial invention relates to a piece of furniture with a recessed handle provided with a slider.

[0002] As it is known, a piece of furniture normally comprises an upper wall, a lower wall, a back wall and two side walls. The walls define a compartment that can be accessed by means of an opening. The piece of furniture is provided with an oscillating front door panel that is hinged to one of the walls and is suitable for covering the opening that gives access to the compartment. The door panel is provided with a handle that is used to open/close the door panel relative to the walls of the piece of furniture.

[0003] Handles are known, which protrude outwards from the door panel and are suitable for being held by a user in order to open and close the door panel. The protruding handles of this type are impaired by several drawbacks. A first drawback of the protruding handles of the prior art consists in the fact that, being in protruding position, they can be an obstacle for the user, with the risk of getting hurt.

[0004] A second drawback consists in the fact that the protruding handles interrupt the clean, linear design of the door panel, thus impairing the aesthetics of the piece of furniture.

[0005] Recessed handles are known, which are suitable for being recessed in the door panel in order to be concealed. The recessed handles of this type are capable of solving, at least partially, the aforementioned drawbacks of the protruding handles according to the prior art.

[0006] The recessed handles of the prior art are normally installed in a housing of the door panel, which is especially made to house the recessed handle.

[0007] The recessed handles usually comprise a frame where the parts of the handle are disposed.

[0008] The pieces of furniture provided with recessed handles are impaired by the fact that the door panel of these pieces of furniture has a higher thickness in order to obtain the housing inside which the recessed handle is disposed. In fact, the frame that contains the parts of the handle has a large volume.

[0009] US5147099 discloses a child-proof latch for drawers, cabinets, and the like. The device disclosed in US5147099 comprises a latch member, a support for the latch member, and an actuator member for selectively moving the latch member between its extended position, in which the cabinet is prevented from opening, and retracted position, in which the cabinet is allowed to open. Locking surfaces are provided on the actuator and the support. In order to open the cabinet, it is necessary to first disengage the locking surfaces and then depress the actuator sufficiently to move the latch to its retracted position.

[0010] The purpose of the present invention is to overcome the drawbacks of the prior art by disclosing a piece of furniture provided with a recessed handle that is concealed and has a small volume, so that the piece of fur-

niture does not need to have a higher thickness.

[0011] Another purpose is to disclose a piece of furniture provided with a recessed handle that guarantees a stable connection of the door panel with the walls of the piece of furniture, in such manner that said piece of furniture can be also installed on means of transportation, such as boats and caravan vans.

[0012] Another purpose is to disclose a piece of furniture provided with a recessed handle without any hollow or protruding surfaces that interrupt the surface linearity of the door panel and where dust can deposit.

[0013] These purposes are achieved according to the invention with the characteristics of the appended independent claim 1.

[0014] Advantageous embodiments appear from the dependent claims. The piece of furniture of the invention is defined by claim 1.

[0015] The advantages of the piece of furniture according to the invention are manifest, wherein, because of the provision of a mobile frame of the recessed handle flush with an ending edge of the door panel, the recessed handle can be visually concealed, in such a way that the recessed handle does not interrupt the linearity of the surfaces of the door panel.

[0016] For the sake of clarity, the description of the piece of furniture according to the invention continues with reference to the attached drawings, which have a merely illustrative, not limiting value, wherein:

Fig. 1 is an axonometric view of a piece of furniture according to the invention,

Fig. 2 is a front view of a handle and of fastening/unfastening means of the piece of furniture of Fig. 1;

Fig. 3 is a sectional view of the piece of furniture according to the invention, taken along the plane III-III of Fig. 1, which shows the handle in closed position;

Fig. 4 is the same as Fig. 3, except for it shows the handle in open position.

[0017] With reference to Fig. 1, a piece of furniture according to the invention is disclosed, which is generally indicated with reference numeral 100.

[0018] With reference to Figs. 1, 3 and 4, the piece of furniture (100) comprises a plurality of walls (1). More precisely, the piece of furniture (100) comprises two side walls (10), a back wall (11), a bottom wall (13) and an upper wall (12).

[0019] Such a plurality of walls (1) defines a compartment (V) that can be accessed by means of an opening, which is suitable for being covered with a door panel (14).

[0020] The upper wall (12), the side walls (10) and the bottom wall (13) have an ending edge (1a) that defines the opening.

[0021] The door panel (14) is suitable for being stopped against the ending edges (1a) of the upper wall (12), of the side walls (10) and of the bottom wall (13). More precisely, the door panel (14) comprises a first surface (14d)

directed towards said plurality of walls (1), and a second surface (14e) directed towards the opposite side of said plurality of walls (1).

[0022] The piece of furniture (100) comprises supporting and moving means of the door panel (14) that move the door panel (14) from a first position to a second position. Said supporting and moving means comprise hinging means used to revolvably connect the door panel (14) to the plurality of walls (1). More precisely, the door panel (14) is hinged to the bottom wall (13).

[0023] In the first position, the first surface (14d) of the door panel (14) is stopped against the ending edge (1a) of the upper wall (12), of the side walls (10) and of the bottom wall (13). In the first position, the door panel (14) has a main portion (14a) that covers the opening that gives access to the compartment (V), and an ending portion (14b) that protrudes relative to the ending edge (1a) of one of the walls towards the side in opposite position to the main portion (14a) of the door panel (14). More precisely, the ending portion (14b) of the door panel (14) protrudes upwards relative to the upper wall (12) of the piece of furniture (100).

[0024] In the second position, the door panel (14) is distant from the upper wall (12), and the surface of the door panel (14) is not in contact with the ending edge (1a) of the upper wall (12), of the side walls (10) and of the bottom wall (13).

[0025] The piece of furniture (100) comprises a recessed handle (3) used to lock/unlock the door panel (14) relative to the plurality of walls (1).

[0026] With reference to Figs. 2 to 4, the recessed handle (3) comprises a fixed frame (30) with box shape. The fixed frame (30) is recessed in a housing (14c) obtained on the first surface (14d) of the door panel (14) and is flush to the first surface (14d) and to an ending edge of the door panel (14). More precisely, the upper surface of the fixed frame (30) is flush with the upper edge of the door panel (14). The provision of a housing (14c) obtained on the first surface (14d) of the door panel (14) and the fact that the fixed frame (30) of the recessed handle (3) is flush with the upper edge of the door panel (14) permit to visually conceal the recessed handle (3) when the door panel (14) is closed.

[0027] The recessed handle (3) comprises a slider (31) that is slidably mounted inside the fixed frame (30) of the recessed handle (3) in such manner to make forward and return travels. The slider (31) comprises an ending section disposed on the ending portion (14b) of the door panel (14) and is suitable for being actuated by a user. For that purpose the fixed frame (30) of the recessed handle (3) comprises a first opening (30a) disposed in the ending portion (14b) of the door panel (14) and housing the ending section of the slider (31). Such first opening (30a) of the fixed frame (30) can be accessed by means of a lateral opening and an upper opening. When in idle position, the ending section of the slider (31) is flush with the upper surface of the fixed frame (30) and, consequently, with the upper edge of the door panel (14), in

such manner not to create hollow or protruding surfaces that interrupt the linearity of the upper edge of the door panel (14) where dust can deposit.

[0028] The piece of furniture (100) comprises fastening/unfastening means (2) to fasten/unfasten the door panel (14) to one of the walls (1). The fastening/unfastening means (2) comprise a frame (24) with box shape. The frame (24) of the fastening/unfastening means (2) is fixed in projecting position to the fixed frame (30) of the recessed handle (3), in such manner that when the door panel (14) is closed, the frame (24) of the fastening/unfastening means (2) protrudes from the door panel (14) towards the compartment (V).

[0029] The fastening/unfastening means (2) comprise a striker (22) disposed in the frame (24) of the fastening/unfastening means (2) and suitable for engaging inside a housing (21) obtained on the upper wall (12). The frame (24) of the fastening/unfastening means (2) comprises a first upper opening (24a) suitable for being crossed by the striker (22), in such manner that the striker protrudes from the frame (24) of the fastening/unfastening means (2) and engages in the housing (21) of the upper wall (12).

[0030] The striker (22) is connected to the slider (31) by means of a shelf (32), in such manner that the slider (31) moves the striker (22) from an engaged position, wherein the striker (22) is engaged in the housing (21) of the upper wall (12), to a disengaged position, wherein the striker (22) is disengaged from the housing (21) of the upper wall (12).

[0031] The shelf (32) of the recessed handle (3) comprises a first ending section that is inserted in the fixed frame (30) of the recessed handle (3) and is connected to the slider (31), and a second ending section that is inserted in the frame (24) of the fastening/unfastening means (2) and is connected to the striker (22) to move the striker (22) from the engaged position to the disengaged position.

[0032] The fixed frame (30) of the recessed handle (3) comprises a second opening (30b) disposed on the main portion (14a) of the door panel (14) to let the shelf (32) protrude from the fixed frame (30) of the recessed handle (3). The frame (24) of the fastening/unfastening means (2) comprises a second opening (24b) in communication with the second opening (30b) of the fixed frame (30) of the recessed handle (3) for the insertion of the shelf (32) in the frame (24) of the fastening/unfastening means (2).

[0033] The slider (31) moves the striker (22) from an engaged position, which is shown Fig. 3, wherein the striker (22) is engaged to the housing (21) of the upper wall (12), to a disengaged position, which is shown in Fig. 4, wherein the striker (22) is disengaged from the housing (21) of the upper wall (12).

[0034] The fastening/unfastening means (2) comprise retention means (23) connected to the striker (22) to push the striker (22) into the engaged position. The retention means (23) comprise a spring disposed in the frame (24) of the fastening/unfastening means and provided with a

first end that is fixed to a lower surface of the frame (24) of the fastening/unfastening means (2), and a second end that is fixed to the striker (22) in lower position.

[0035] More precisely, the striker (22) comprises a base platform (26), which is suitable for cooperating with the shelf (32) to move the striker (22). The second end of the spring is fixed to a lower surface of the base platform (26) of the striker (22).

[0036] The fixed frame (30) of the recessed handle (3) comprises stop means (37) that act as stops for the sliding movement of the slider (31) relative to the fixed frame (30) of the recessed handle (3), stopping said sliding movement. More precisely, the stop means (37) comprise a first stop surface (37a) against which the slider (31) is engaged in order to stop a forward travel of the slider (31), during which the slider (31) moves the striker (22) to the disengaged position. The stop means (37) comprise a second stop surface (37b) against which the shelf (32) is engaged in order to stop a return travel of the slider (31), which is moved by the retention means (23) that push the striker (22) to the engaged position.

[0037] The first stop surface (37a) of the stop means (37) coincides with a lower edge that defines the first opening (30a) of the fixed frame (30) of the recessed handle (3). The ending section of the slider (31) comprises a tooth suitable for being stopped against said lower edge that defines the first opening (30a) of the fixed frame (30) in order to stop a forward travel of the slider (31).

[0038] The second stop surface (37b) of the stop means (37) coincides with an upper edge that defines the second opening (30b) of the fixed frame (30) of the recessed handle (3). The shelf (32) is suitable for being engaged against said upper edge that defines the second opening (30b) of the fixed frame (30) in order to stop a return travel of the slider (31).

[0039] The slider (31) is moved downwards by a user until said slider (31) is engaged against the first stop surface (37a) of the retention means (37). The shelf (32) moves integrally with the slider (31) and moves the striker (22) downwards to its disengaged position. The striker (22) protrudes from the housing (21) of the upper wall (12). The door panel (14) is no longer locked to the upper wall (10c) and can be opened.

[0040] When the slider (31) is released, the retention means (37) push the striker (22) upwards, in such manner that the striker (22) is moved to its engaged position. Consequently, the striker (22) moves the shelf (32) and the slider (31) upwards. The upward movement of the slider (31) ends when the shelf (32) is engaged against the second stop surface (37b) of the stop means (37) and the slider (31) is flush with the upper surface of the fixed frame (30) of the recessed handle (3).

[0041] In order to lock the door panel (14) to the plurality of walls (1), it is simply necessary to move the door panel (14) close to the ending edges (1a) of the upper wall (12), of the side walls (10) and of the bottom wall (13). In fact, the ending edge (1a) of the upper wall (12) is advantageously configured in such a way to let the

striker (22) overcome the ending edge (1a) automatically when the door panel (14) is moved from an opening position to a closing position.

[0042] Because of the provision of the slider (31) and of the striker (22), the volume of the recessed handle (3) can be reduced in such manner that the door panel (14) does not need to have a higher thickness.

[0043] Moreover, because of the provision of the striker (22), the fastening/unfastening means (2) of the piece of furniture (100) guarantee a stable connection of the door panel (14) to the walls of the piece of furniture (100), in such manner that the piece of furniture (100) can be also installed on means of transportation, such as boats or caravan vans, without the risk of accidentally opening the door panel (14) because of the movement of the means of transportation.

[0044] Although this description refers to a door panel (14) hinged to the bottom wall (13) and provided with an ending portion (14b) that protrudes relative to the upper wall (12), said door panel (14) can be alternatively hinged to the side wall (10) or to the upper wall (12) and the ending portion (14b) can protrude relative to the side wall (10) or to the lower wall (13).

[0045] Although this description refers to a piece of furniture (100) that comprises a plurality of walls (1) that define a compartment (V), the piece of furniture (100) can comprise only one wall (1) to which the door panel (14) is hinged. Said wall (1) comprises an ending edge (1a) against which the door panel (14) is stopped. An example of this type of furniture is a table with extensions, in which the panel is hinged to an end of the top of the table, in such a way to conceal the extensions disposed under the top of the table.

Claims

1. Piece of furniture (100) comprising:

- a wall (1) comprising an ending edge (1a);
- a door panel (14) comprising a first surface (14d) directed towards said wall (1) and a second surface (14e) directed towards the opposite side of said wall (1);
- supporting and moving means of the door panel (14) that move the door panel (14) from a first position to a second position; in said first position, said door panel (14) being disposed with its first surface (14d) in contact with the ending edge (1a) of the wall (1) and having a main portion (14a) and an ending portion (14b) that protrudes relative to said ending edge (1a) of the wall (1) towards the side in opposite position to said main portion (14a) of the door panel (14); in said second position, said door panel (14) being distant from said wall (1), with the surface of the door panel (14) not in contact with the ending edge (1a) of the wall (1); said door panel (14)

- comprising a housing (14c) obtained on the first surface (14d) of said door panel (14);
- a recessed handle (3) to lock/unlock said door panel (14) relative to the wall (1); said recessed handle (3) comprising a fixed frame (30) that is recessed in the housing (14c) of the door panel (14) and a slider (31) that is slidably mounted in said fixed frame (30) in such manner to make forward and return travels;
 - fastening/unfastening means (2) to fasten/unfasten said door panel (14) to the wall (1); said fastening/unfastening means (2) comprising a striker (22) intended to be engaged inside a housing (21) of the wall (1); said striker (22) being connected to the slider (31) in such manner that the slider (31) moves said striker (22) from an engaged position, wherein the striker (22) is engaged in the housing (21), to a disengaged position, wherein the striker (22) is disengaged from the housing (21); said fastening/unfastening means (2) comprising retention means (23) connected to said striker (22) to push said striker (22) into the engaged position;
- characterized in that** the fixed frame (30) of the recessed handle (3) is flush with an ending edge of said door panel (14).
2. The piece of furniture (100) of claim 1, wherein said recessed handle (3) comprises a shelf (32) connected to said slider (31) and to said striker (22) in order to move said striker (22) from the engaged position to the disengaged position.
 3. The piece of furniture (100) of claim 2, wherein said fastening/unfastening means (2) comprise a frame (24) that houses the striker (22) and the retention means (23); said shelf (32) of the recessed handle (3) comprising a first ending section disposed in the fixed frame (30) of the recessed handle (3) and connected to the slider (31), and a second ending section disposed in the frame (24) of the fastening/unfastening means (2) and connected to the striker (22).
 4. The piece of furniture (100) of claim 3, wherein said striker (22) comprises a base platform (26); said retention means (23) comprising a first end that is fixed to a lower surface of the frame (24) of the fastening/unfastening means (2) and a second end that is fixed to the base platform (26) of the striker (22).
 5. The piece of furniture (1) of any one of the preceding claims, wherein said fixed frame (30) of the recessed handle (3) comprises stop means (37) to stop the sliding movement of the slider (31) relative to the fixed frame (30).
 6. The piece of furniture (1) of claim 5, wherein said recessed handle (3) comprises a shelf (32) connected to said slider (31) and to said striker (22); said stop means (37) comprising:
 - a first contact surface (37a) against which the slider (31) is intended to be engaged in order to stop a forward travel of the slider (31);
 - a second contact surface (37b) against which the shelf (32) is intended to be engaged in order to stop a return travel of the slider (31).
 7. The piece of furniture (1) of any one of claims 2 to 6, wherein said fixed frame (30) of the recessed handle (3) has a box shape and comprises:
 - a first opening (30a) in the ending portion (14b) of the door panel (14) that houses an ending section of the slider (31);
 - a second opening (30b) in the main portion (14a) of the door panel (14) to let the shelf (32) of the recessed handle (3) pass through.
 8. The piece of furniture (100) of any one of claims 3 to 6, wherein said fixed frame (24) of the fastening/unfastening means (2) has a box shape and comprises:
 - a first opening (24a) intended to be crossed by the striker (22);
 - a second opening (24b) for the insertion of the shelf (32) of the recessed handle (3).
 9. The piece of furniture (100) of any one of the preceding claims, comprising:
 - two side walls (10);
 - a back wall (11);
 - an upper wall (12);
 - a bottom wall (13);
 - a compartment (V) defined by said walls (10, 11, 12, 13);
 - an opening that gives access to the compartment (V), suitable for being covered by said door panel (14);
 said ending portion (14b) of the door panel (14) protruding upwards relative to the upper wall (12) of the piece of furniture (100).

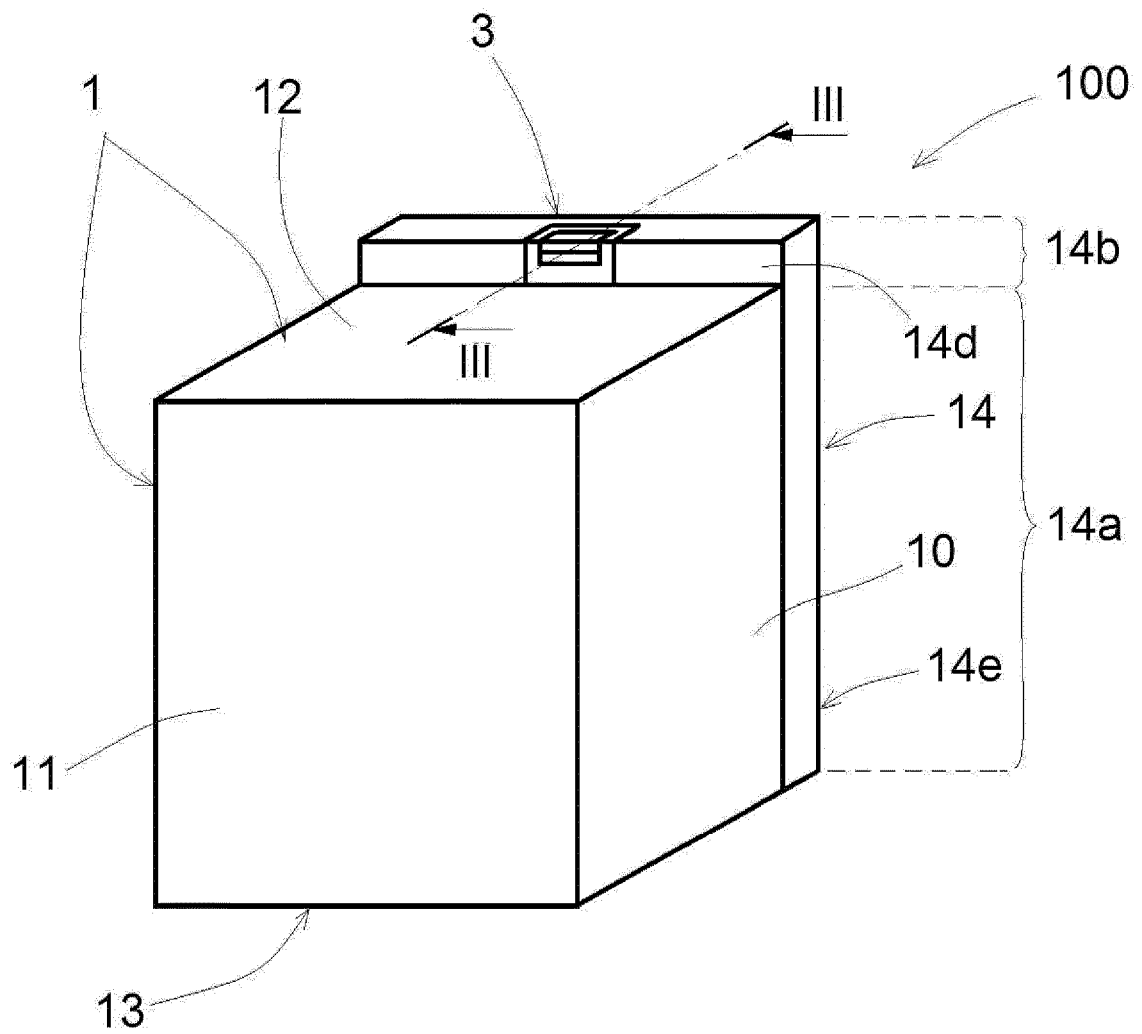


FIG. 1

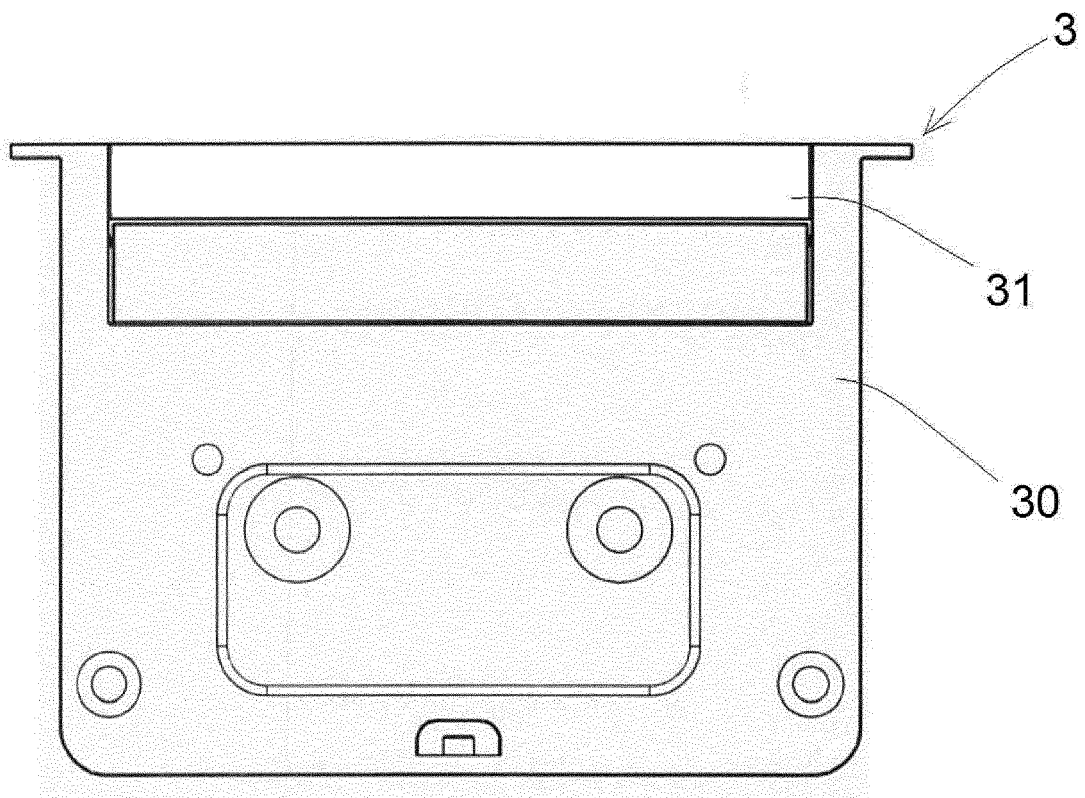
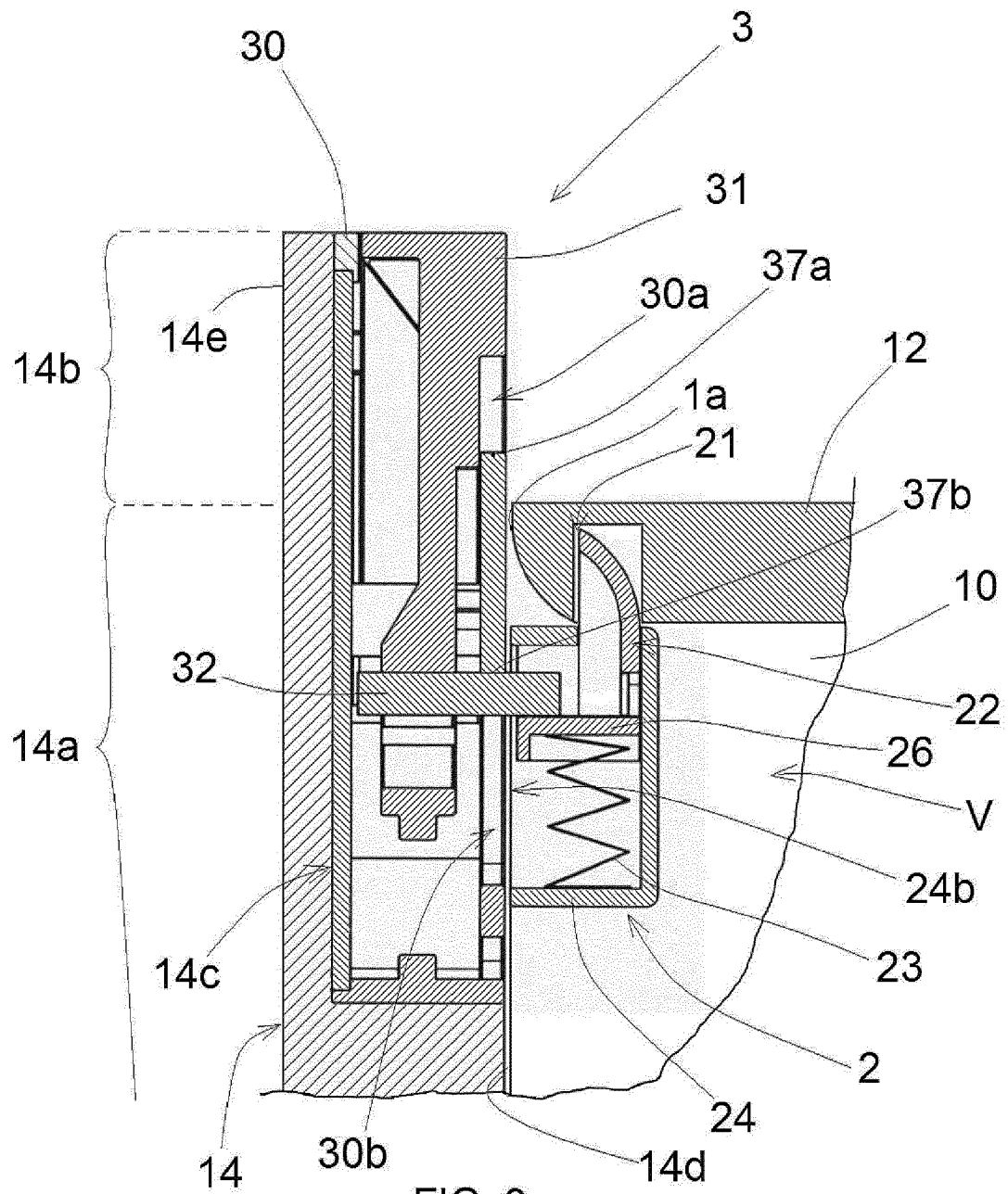


FIG. 2



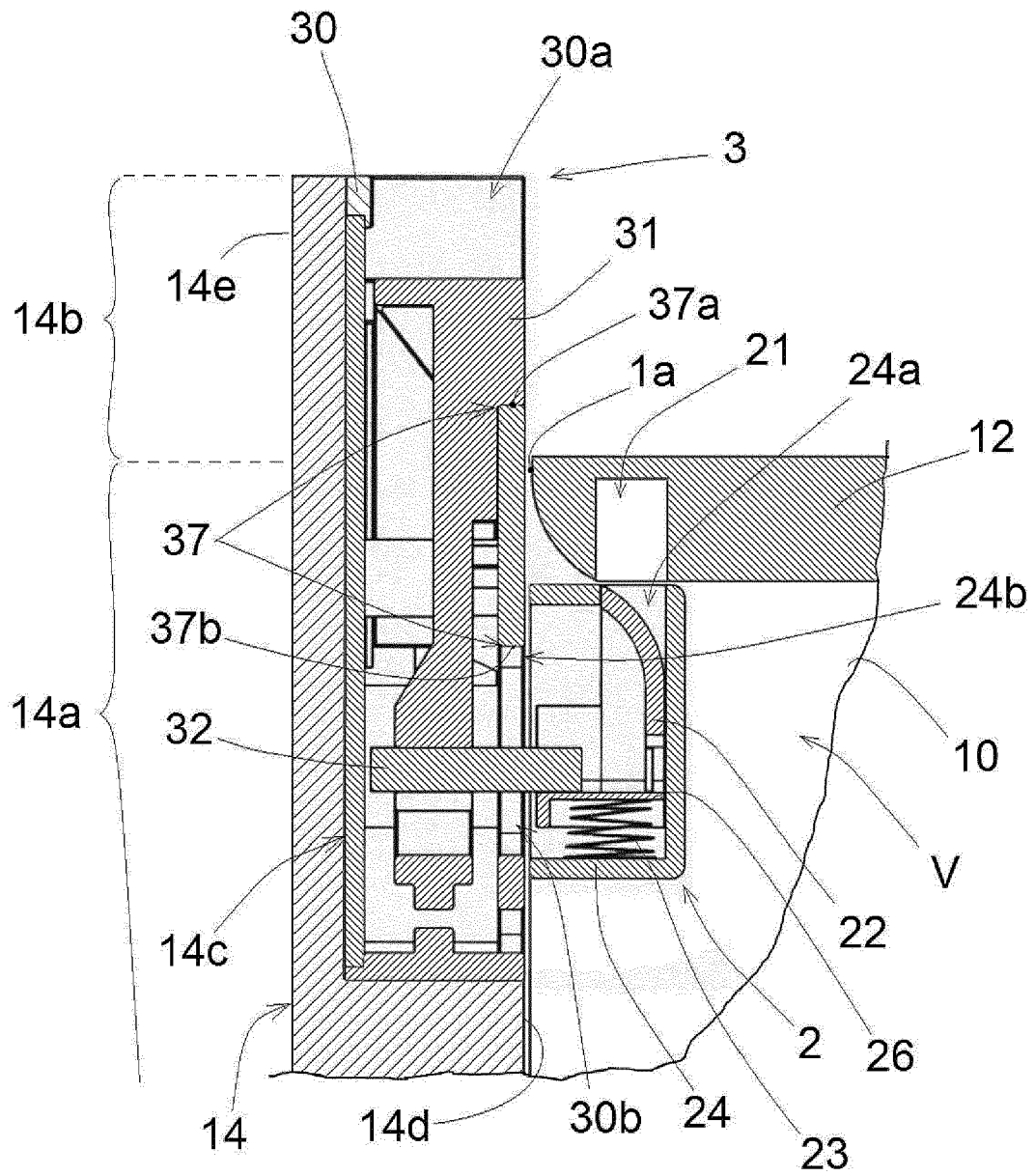


FIG. 4



EUROPEAN SEARCH REPORT

Application Number
EP 18 18 8173

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 5 147 099 A (MCLINDEN THOMAS [US] ET AL) 15 September 1992 (1992-09-15) * figures 1-6 *	1-9	INV. A47B95/02 E05C1/10 E05C1/16
A	US 5 626 372 A (VOGT PETER A [US]) 6 May 1997 (1997-05-06) * figures 1-6 *	1,2,5,6,9	ADD. E05B65/44
A	US 5 697 655 A (STRONG BERNARD [US]) 16 December 1997 (1997-12-16) * figures 1-4 *	1-5	
A	US 4 139 249 A (HILLMAN ERNEST C) 13 February 1979 (1979-02-13) * figures 1-2 *	1-5	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47B E05B E05C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 18 September 2018	Examiner Ibarrondo, Borja
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 18 18 8173

5

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.

18-09-2018

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5147099 A	15-09-1992	NONE	
US 5626372 A	06-05-1997	NONE	
US 5697655 A	16-12-1997	NONE	
US 4139249 A	13-02-1979	CA 1111461 A US 4139249 A	27-10-1981 13-02-1979

15

20

25

30

35

40

45

50

55

EPO FORM P0459

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

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

- US 5147099 A [0009]