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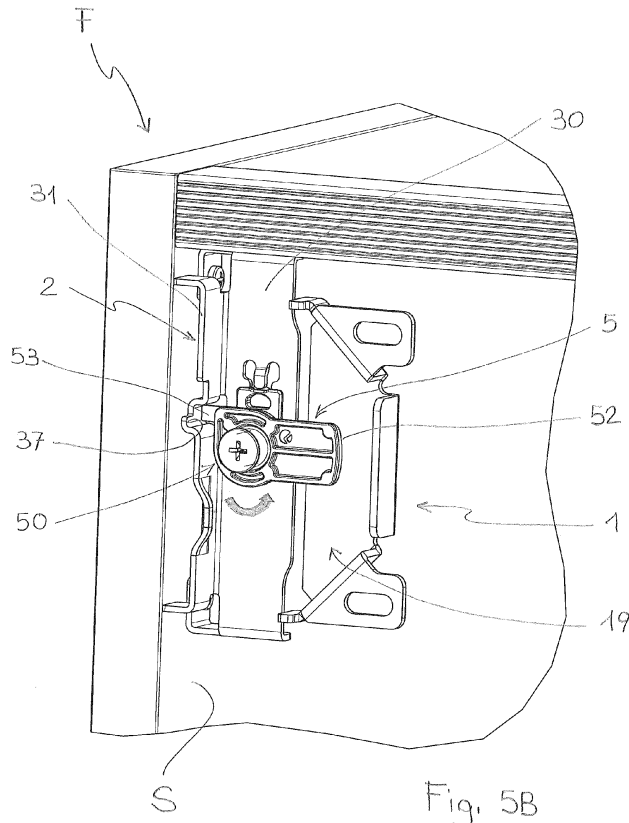
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(54) **ANTI-OVERTURN DEVICE FOR FURNITURE**

(57) The present invention refers to an anti-overturn device for furniture and in particular to an especially versatile device that is simple to install on both sides and backs of floor-mounted furniture.



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Description

TECHNICAL FIELD OF INVENTION

[0001] The present invention refers to an anti-overturn device for furniture and in particular to an especially versatile device that is simple to install on both sides and backs of floor-mounted furniture.

PRIOR ART

[0002] Floor-mounted furniture pieces, especially if they are tall and narrow, are generally installed against a wall and fixed to the same to improve their stability. In fact, it can easily happen that, due to a load arranged unevenly or to the opening of a door or of a heavy drawer, the furniture piece tends to tilt away from the wall and topple against somebody.

[0003] Thus, various systems are found for fixing them against a wall and avoid this problem. These systems include simple devices in the form of L-shaped brackets, having one side fastened to the side or the top of a furniture piece and the other side fixed to the wall. Although this system is very simple and economic, it does not allow any adjustment after mounting, as is often required particularly with modern kitchen furniture. In addition, the brackets are exposed and are unattractive to see.

[0004] More complex devices generally include a first element to be fixed to the wall and a second element to be fastened to the furniture, the latter being provided with means that engage the first element, which can be adjusted vertically and/or detached from the wall.

[0005] A device of this type is described for example in Patent EP1790253. In particular, the engaging means consist of a screw with one end engaging the first element and an opposite adjusting end, with a spring pushing the stem of the screw upward. While this device solves the problems of the L-shaped brackets, it is still cumbersome and thus impossible to be mounted on the back of the furniture. Moreover, the adjustment of the foot on the furniture causes the displacement of the screw that adjusts the means that engage the second element with the first element. The activation of the mechanism is also complicated since the engaging means must first be shifted toward the floor, then the furniture must be moved against the wall, and finally the adjusting screw must be adjusted to bring the engaging means in contact with the element fixed to the wall. Likewise, the disengagement is intricate because the above operations must be carried out in reverse order. In addition, the positioning near the right side and the left side of the furniture piece involves the use of two different specific devices for each side. This means complicating the production and the relative storage of the furniture, in addition to increasing the production costs.

[0006] A further device described in ES2356652 includes a first wall fixing element consisting of a plate with a semi-circular groove provided with a window that is

engaged by a second element fastened to the furniture provided with a tooth that is alternately turned to the position of engagement and disengagement from said plate by means of an adjusting screw. A sleeve coaxial with said screw is then rotated to lock/unlock the rotation of said screw. The rotation of both the screw for engagement to the wall by means of the fastening plate and of the locking/unlocking sleeve is made around an axis orthogonal to the wall. In addition, this system is anchored to a plate provided with a hole that is engaged with a pin or a plate fixed to the side of a furniture piece.

[0007] In this case, too, the system is structurally complex, requiring various mounting and operation procedures, and cannot be applied to the back of a furniture.

SUMMARY OF THE INVENTION

[0008] The main objective of the subject matter of the present invention is to overcome the drawbacks of the prior art by devising an anti-overturn device for furniture that is not cumbersome so that it can be applied both on the sides of furniture without backs, such as for example the bases for kitchens or sink tops, and on furniture with backs, that is independent of any adjustment of the feet, easily assembled independently from the right or left side of the furniture, and it is also just as easy to operate.

[0009] The above objective and purposes, as well as others that that will be more evident later, will be achieved with a support element for furniture shelves as defined in claim 1.

[0010] Thus, a first objective of the invention is an anti-overturn device for furniture provided with a particularly simple and reliable structure.

[0011] A second objective is an anti-overturn device for furniture that is highly versatile because it can be applied without any modifications both on the sides of a furniture piece and on its back.

[0012] A third objective is an anti-overturn device for furniture which with a single control can be actuated in a completely operative mode.

[0013] A further objective is an anti-overturn device that does not require making particular modifications on the furniture to be installed and can be accessed to be activated or deactivated.

BRIEF DESCRIPTION OF THE FIGURES

[0014] Advantages, characteristics and other objectives of the invention will become evident from the following description, given by way of example and without limitations, with reference to the enclosed figures, wherein:

- figures 1A-1D illustrate respectively an axonometric view, a front view, a side view and a top view of a first element of the anti-overturn device for furniture of the present invention;
- figure 2A is an axonometric and exploded view of a

- second element of the anti-overturn device of the invention;
- figure 2B is an axonometric view of the assembled element of figure 2A;
 - figures 3A-3B illustrate respectively an axonometric back view and a front view of one portion of the back of a furniture piece with the second element of the inventive device fixed on a side of the same;
 - figures 4A-4B illustrate two axonometric views of figure 3B with the inventive device installed respectively in a non-operative condition and a first operative condition;
 - figures 5A-5B illustrate two posterior axonometric views of the furniture with the device of figure 4 respectively in the first operative condition and in a second operative condition;
 - figures 6A-6C illustrate views in transversal cross sections of the inventive device installed on the side of a furniture piece respectively in the non-operative condition, in the first operative condition and in the second operative condition;
 - figures 7A-7B illustrate two axonometric views of a variant of the second element of the inventive device, respectively free-standing and fixed to a furniture piece with back;
 - figure 8 is a posterior view of a furniture with two identical devices of the invention applied in an operative mode on both the right and left side of the same furniture.

DETAILED DESCRIPTION OF THE INVENTION

[0015] With reference to figures 1 and 2, the device of the invention comprises a first element 1 (figure 1) to be fixed to a wall (not shown) configured to cooperate with a second element 2 (figure 2) to be reversibly fixed to the furniture to lock it against the risk of toppling.

[0016] The first element 1 consists in general of a conventional plate (not shown) that extends along a rectilinear axis and comprises a first longitudinal portion lying on a first plane and provided with a plurality of holes and a second longitudinal portion lying on a different plane. The first portion is fixed to the wall so that the second portion projects from the same so as to form a kind of longitudinal pocket to be engaged with the second element. Preferably, the plate is shaped as a bridge extending along a longitudinal axis X-X and comprises a main body 10 from which extends a shoulder 16 provided with drilled protrusions 11A to be fixed to a wall through conventional screws (not shown). More preferably, the body 10 includes in turn a first wall 12, generally flat, that extends along said axis X-X and is provided with a first free edge 13 and a second edge 14, opposite and parallel to said first edge, from which extends a second flat wall 15 orthogonal to said first wall. The two shoulders 16 extend further, orthogonal to the first wall, so as to form with the second wall 15 a kind of pocket 19 delimited by a first closed face 20, a second open face 21 opposite to the

first face, a first open side 22 and a second closed side 23 opposite the first side (figures 1A, 1B and 1C). Preferably, the shoulders extend from two oblique edges 17 that join said first and second edges 13, 14. Thus, the body 10 displays in top view a shape as an isosceles trapeze. The two drilled protrusions 11A extend from a respective edge 18 opposite to each of the oblique edges 17, in a parallel manner with respect to the first wall 12.

[0017] In this manner, the first element 1 creates a sort of pocket that can be engaged by corresponding blocking means of the fixing element 2 to the furniture of the inventive device, as will be described later.

[0018] Preferably, the first element 1 comprises two further protrusions 11B that extend from the two shoulders 16 orthogonal to the first edge 13. These further protrusions serve as additional safety means as described below to vertically block an engaging member (described later) of the second element in the case of a very low and deep furniture piece that tilts on the front feet if a drawer is opened.

[0019] The second element 2 (figure 2A) to be fixed to the furniture comprises a support 3 to be fixed to the furniture, an actuating threaded pin 4 and a reversible engaging member or lever 5 actuated by said pin. Preferably, said member also comprises a means 6 for irreversibly blocking the threaded pin 4 on the support 3.

[0020] The support 3 has a generally plate-like shape that extends along a longitudinal axis Y-Y and comprises a first portion 30 that lies on said axis Y-Y and a second portion 31 that extends continuously from and is orthogonal to said first portion. The first portion 30 is generally flat with a first face 38 opposite a second face 39 and displays a first free longitudinal edge 32A opposed to a second longitudinal edge 32B integral with said second portion. A central through hole 33 is formed to receive said threaded pin 4, as explained later. Preferably, the hole 33 comprises a first part 33A of its contour that adapts to a portion of the circumference of the pin 4 and a second part 33B adapted to be engaged by said screw blocking means 6. A tab 34 is then formed in said second part and protrudes from the first face 38 in order to achieve a snap engagement with said blocking means.

[0021] In addition, each of the two ends 35 of the first portion 30 is bent 90° from its plane toward the second face 39 and, in turn, includes a drilled bend 36 to be fixed to a side, as explained later. In particular, the bend 36 make it possible to fix the support 3 on one side in an orthogonal direction with respect to the Y-Y axis. Alternatively, the ends can be flat and provided with holes for fixing them to a back of the furniture piece.

[0022] The second portion 31 of the support extends from the first face 38 of the first portion 30 and advantageously comprises a seat 37 for receiving in abutment a stop tooth of said member 5 for engaging the element 2 for fixing to the furniture with the wall-fixing element 1, as will be described later.

[0023] The threaded pin 4 that actuates the engaging member 5 comprises advantageously a first end 40 pro-

vided with a circumferential groove 41 for engaging with said first part 33A of the contour of the hole 33 of the first portion 30 of the support 3. In addition, the first end includes axially a hole 42 (figure 3B) for engagement with a rotation tool. The cylindrical wall of the screw is covered by a conventional thread. On the other hand, the second end 43 is provided with a flanged end 44 to prevent the withdrawal of the engaging member 5.

[0024] The engaging member 5 is advantageously a kind of rotating bolt having a generally flat shape with a first portion 50 provided with a threaded hole 51 for engaging with the actuating pin 4 and an elongated second portion 52 for engaging with the above first element 1 for fixing to the wall. In particular, the first portion 50 comprises a protruding tooth 53 adapted to engage in abutment the seat 37 of the second portion 31 of the support 3 of the second element 2 for fastening to the furniture, as will be explained below. The tooth extends from the first portion in the opposite direction with respect to the second portion 52.

[0025] Preferably, the second element 2 comprises a means for blocking the threaded pin 4 in an operative position in the hole 33 of the first portion 30 of the support 3. In particular, this means 6 is a clip with a first portion 60 provided with an arcuate edge 61 to be engaged with a portion of the circumferential groove 41 of the threaded pin 4 and second portion 62 adapted to engage the second part 33B of the contour of the hole 33 of the support 3.

[0026] The installation of the second element 2 ready to be used envisages first of all the screwing in of the engaging member 5 on the threaded pin 4 from its first end 40 until it reaches and stops against the flanged head 44. At this point, the screw is inserted into the hole 33, from the side of the first face 38 of the first portion 30 of the support, engaging part of its groove 41 with the first part 33A of the contour of the hole 33. In doing this, the first end 40 of the pin 4 protrudes from the second face 39 of the first portion 30 of the support 3. Before the pin 4 is secured with the engaging member 5 on the support 3 against an accidental release, the second elongate portion 52 is checked to ensure that it is arranged along the axis Y-Y of the support 3 and, at the same time, the tooth 53 is checked to make sure that it is also turned in the direction of the axis Y-Y and is located far from the second portion 31 of the support 3 (figure 2B).

[0027] When installed in this manner, the threaded pin 4 and the engaging member 5 have a common axis of rotation A-A orthogonal to the first portion 30 of the support 3.

[0028] Now, preferably, the means 6 for locking the threaded pin 4 can be inserted into the hole 33 of the first portion 30 of the support 3 to achieve a snap-in engagement with the tab 34 and engage the second part 33B of the contour of the hole 33. At the same time, the arcuate edge 61 of the means 6 engages the groove 41 of the threaded pin 4.

[0029] In this assembled configuration, the second element 2 of the device is ready to be mounted on a furni-

ture.

[0030] As shown in figures 3A and 3B, the assembled second element 2 is applied to one side L of a furniture F by means of a screw S that engages the drilled bend 36 of each end 35 of the first portion 30 of the support 3 and is screwed onto the same side. The second element 2 is then applied to the side L with its longitudinal axis Y-Y parallel to the same side. In other words, the second element is mounted on the furniture F when with the furniture rests on the ground, with its axis Y-Y vertical to the ground and with the rotating axis A-A of the threaded pin 4 and of the member 5 orthogonal to a wall (not shown) on which the furniture will be made to rest (figure 3A).

[0031] At this point, the furniture F with the second element 2 applied can be moved against a wall to be reversibly blocked there in order to avoid said risk of tipping over. In particular, the first element 1 will first be fixed to the wall by means of two screws (not shown) that will engage corresponding holes of the two drilled protrusions 11A so that its longitudinal axis X-X is also vertical with respect to the ground and its free edge 13 is turned toward and parallel to the side of the furniture where the second element 2 is fixed (figure 4A). This position makes it so that the pocket 19 of the first element is accessible by the engaging member 5 of the second element 2 (figure 4A). In fact, using a simple tool like a screwdriver it is sufficient to rotate the pin 4 by engaging its axial hole 42 on the first end 40 (figure 4B). This operation is carried out by accessing the rear of the furniture from inside, as shown in figure 4B. It should be noted that the axis of rotation A-A of the pin 4 is misaligned with respect to the first wall fixing element 1, precisely so as to permit said engagement of the member 5 with the pocket 19. In other words, since the engagement between the member 5 and the pocket 9 takes place with a rotation on a plane parallel to the plane of the wall, the first element 1 and the second element 2 of the inventive device must be set side by side, but must not overlap each other even partially, so as to allow the member 5 to engage and disengage the pocket and allow the movement of the furniture away from the wall.

[0032] With reference to figure 5A, it is possible to better understand how the reversible anti-overturning of the furniture is blocked. In fact, behind the furniture and from its external side, it can be seen how said rotation of the pin 4 gives the engaging member 5 a rotation of 90° from the position along the axis Y-Y of the second element 2 to a position orthogonal to said axis. In this manner, the second portion 52 of the member 5 is positioned inside the pocket 19 of the first element 1 and, at the same time, the tooth 53 of the first portion 50 of the member engages the seat 37 of the second portion of the second element 3.

[0033] Continuing then to turn the pin 4 always in the same direction, since the member 5 cannot turn further it will begin to translate along the pin 4 until its second end 52 abuts against the internal wall of the pocket 19 (figure 5B). In this configuration of the inventive device, the furniture piece F is firmly fixed to prevent any acci-

dental overturning. A further safety is then provided by the additional protrusions 11B of the first element 1, since if these protrusions were not present the levers 5 would risk to slide along the two inclined shoulders 16 and exit from above and allow the detachment of the base, especially in the case in which a very low and deep furniture piece tilts on the front feet when a drawer is opened. This is not possible if the two first elements 1 are ideally positioned with respect to the sides, but in the case of a particular distant position from the sides, at least one of the two second elements 2 could risk not functioning correctly.

[0034] With reference to figures 6A-6C, the activation of the device just described is even more evident. In fact, the sections show how in the first condition, identical to the one of figure 4A, the first element 1 is fixed to the wall W and the furniture F with the second element 2 fixed to its side S rests against the wall W. Following the first rotation of the pin 4 (figure 6B), the second end 52 of the engaging member 5 turns and inserts itself into the pocket 19 of the first element 1. With a further rotation of the pin 4 (figure 6C), the member 5 translates over the axis A-A of the pin until the second end 52 abuts against the internal wall of the pocket 19.

[0035] With reference to figures 7A and 7B, a different form of embodiment of the invention is shown in which the first element of the device (not shown) is identical to the first element previously described. The second element 200 is also generally the same as the second element mentioned above and includes identical pieces indicated with the same reference numbers. In particular, this second element 200 comprises a support 300 equipped with a first portion 330 provided with two ends 335 drilled and bent on its first face 380 and a second portion 310 similar to the one previously described. Preferably, the second portion 310 also includes a pair of holes 311. In this manner, said drilled ends 335, possibly assisted by the holes 311 on the second portion 310, allow the fastening by means of screws to a top T and/or to the side S of a furniture F, as shown in figure 7B.

[0036] From what was previously explained, the device of the invention can advantageously be mounted independently on one side, right or left, of a backless furniture piece, as shown for example in figure 8, or on a furniture with back near each of said sides. In fact, thanks to its structure, it can be easily adaptable because it is sufficient to rotate it 180° on the vertical plane to position it on the right or left side of the furniture piece.

[0037] From what was described hereto, it is evident that the drawbacks referred to the prior art anti-overturning device have been resolved and that at the same time important advantages have been achieved in addition to those already illustrated.

[0038] In particular, on the furniture with backs it is sufficient to make a hole to access the pin 4 that locks and unlocks the device.

[0039] The size of the device is minimal and such as to be applied on the external surface of a standard fur-

niture back without requiring the furniture to be detached from the wall.

[0040] In addition, the mechanical locking system is safe because the unlocking must be achieved with a tool as previously described; that is, it is necessary to access the internal surface of the back of the furniture or the internal surface of the sides.

[0041] The locking and unlocking is particularly advantageous because both can be achieved with a single screwing and unscrewing operation using a simple tool.

[0042] The structure of the device is mechanically simple, and therefore, as it does not require any maintenance, it is equally easy and reliable to install. In addition, both the first and the second elements are vertical with respect to the floor when they are in an operative condition.

[0043] The engagement with the first plate element fixed to the wall is achieved with the rotation of a lever device or a latch that turns 90° parallel to the surface of the wall, thus making it possible to obtain the compact size mentioned above.

[0044] The risk of release due to counter-rotation is easily avoided thanks to the arrangement of the above-mentioned tooth.

[0045] The actuating screw can then be locked in an operative position thanks to the particular shape of the engagement hole with the corresponding support, and also thanks to the further snap-in stop element.

[0046] Many variants of the inventive device described above are available to a skilled technician without departing from the field of patent protection as defined by the enclosed claims.

[0047] For example, the shape of the plates that form the first and the second element can be chosen at will, taking into account the function of the pocket of the first element and of the screw and the lever support that must be fixed to one side of the furniture or to the back.

[0048] The materials with which the various pieces can be made may be chosen from among those commonly available for similar prior-art devices, such as for example metal or reinforced plastic.

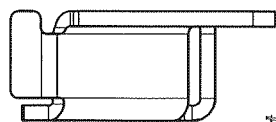
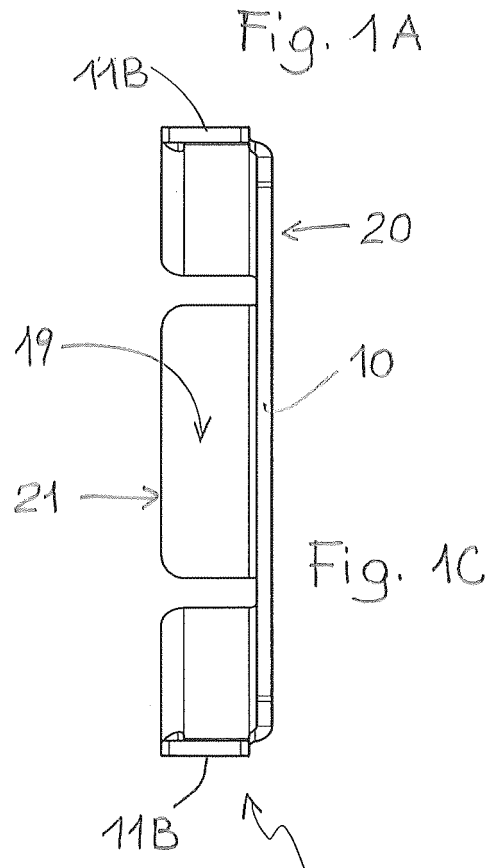
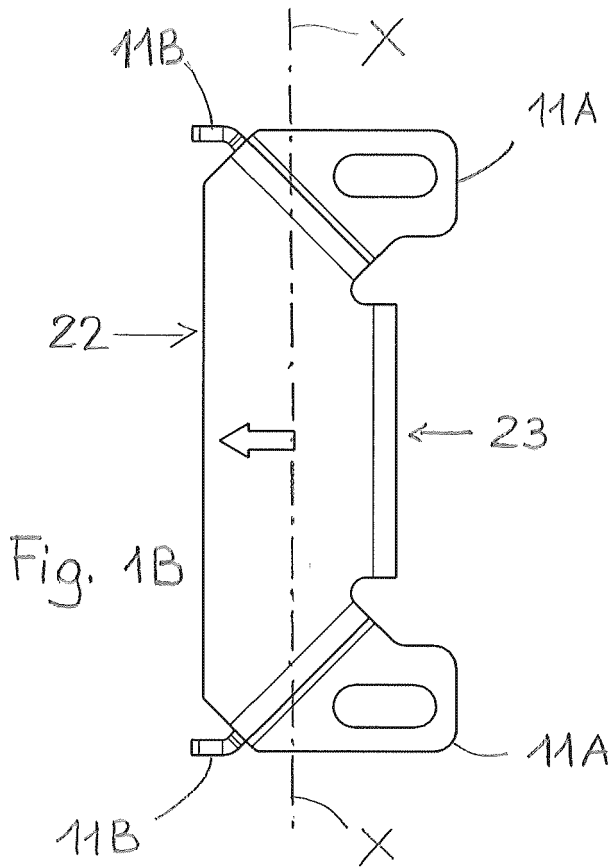
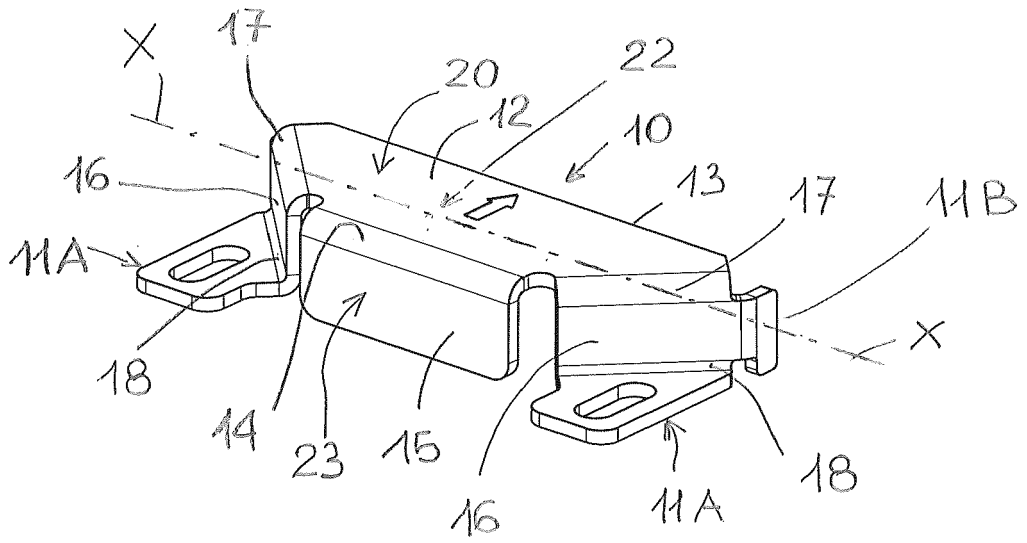
[0049] The shape of the support 3 of the second element 2 in the coupling zone to the furniture piece can be modified at will to produce different types of fixing devices (for example, different screws, locating dowel pins and screws, converter for fixing directly to thick backs with holes drilled on the first portion 30 of the support).

[0050] The shape of the first element 1 can be modified while maintaining a guide or vertical pocket coupling with the lever 5 that can allow the adjustment in height of the furniture without losing the connection with the lever itself.

55 Claims

1. Anti-overturn device for furniture comprising a first element (1) to be fixed to a wall (W) configured to

- cooperate with a second element (2) to be fixed to a furniture (F), said first element (1) being a plate elongated along a longitudinal axis (X-X) and comprising a pocket (19) for the engagement with said second element (2), **characterized in that** said second element (2) comprises a one-piece support (3) to be fixed to said furniture (F), said element being provided with a hole (33) engaged by a threaded pin (4) onto which a rotating member (5) is screwed, so that the pin rotation is carried out on an axis (A-A) orthogonal to the wall (W) when the furniture with said second element is close to the same wall, in order to allow also the rotation of the member (5) around said pin axis to alternately engage and disengage said first element (1).
2. Device according to claim 1, wherein said rotating member (5) also moves along the axis (A-A) of the threaded pin (4).
3. Device according to claim 1 or 2, wherein the rotating axis (A-A) of the pin (4) is misaligned with respect to said first element (1).
4. Device according to any one of claims 1 to 3, wherein said rotating member (5) rotates by 90° with respect to the longitudinal axis (Y-Y) of said support (3).
5. Device according to any one of claims 1 to 4, wherein said rotating member (5) comprises a first portion (50) provided with a threaded hole (51) to engage said threaded pin (4), and said portion is provided with a stop tooth (53), and a second elongated portion (52) to engage with said first element (1) to be fixed on the wall.
6. Device according to any one of claims 1 to 5, wherein said elongated plate (1) is formed as a bridge with a main body (10) being flat and elongated along said longitudinal axis (X-X) and with two shoulders (16) provided with drilled protrusions (11A) to be fixed to said wall (W).
7. Device according to claim 6, wherein the body (10) further comprises a generally flat wall (12) extending along said axis (X-X) and is provided with a first free edge (13) and a second edge (14), opposite to and parallel to said first edge, from which a second flat wall (15) extends orthogonal to said first wall in order to delimit with said two shoulders (16) a pocket (19).
8. Device according to claim 7, wherein each of said two shoulders (16) further comprises (11B) a further protrusion extending orthogonal to said first free edge (13).
9. Device according to any one of claims 6 to 8, wherein the holes of said protrusions (11A) are orthogonal to said free edge (13) of the main body (10).
10. Device according to any one of claims 1 to 8, wherein said support (3) comprises a first portion (30) laying onto the longitudinal axis (Y-Y) of the same support and said portion is provided with said hole (33) for engaging said threaded pin (4), and a second portion (31) orthogonal to and in continuous with said first portion, provided with a seat (37) for receiving in abutment a stop teeth (53) of said member (5) engaging with said first element (1).
11. Device according to any one of claims 1 to 9, wherein said hole (33) for engaging said pin (4) comprises a first part (33A) of its contour which engages a portion of a circumferential groove (41) of said threaded pin (4), and a second portion (33B) configured to be snap-in engaged by a blocking means (6) of the pin (4) onto the support (3).
12. Device according to claim 11, wherein said blocking means (6) of said pin (4) onto the support (3) is a clip comprising a first portion (60) provided with an arcuate edge (61) for engaging a portion of said circumferential groove (41) of the pin (4) and a second portion (62) configured to engage the second part (33B) of the contour of the hole (33) of the support (3).
13. Device according to any one of claims 1 to 7, wherein said support (3;300) comprises two ends (35;350) provided with a drilled bending (36) for fixing to a side (S) and/or top (T) and/or back of a furniture (F).



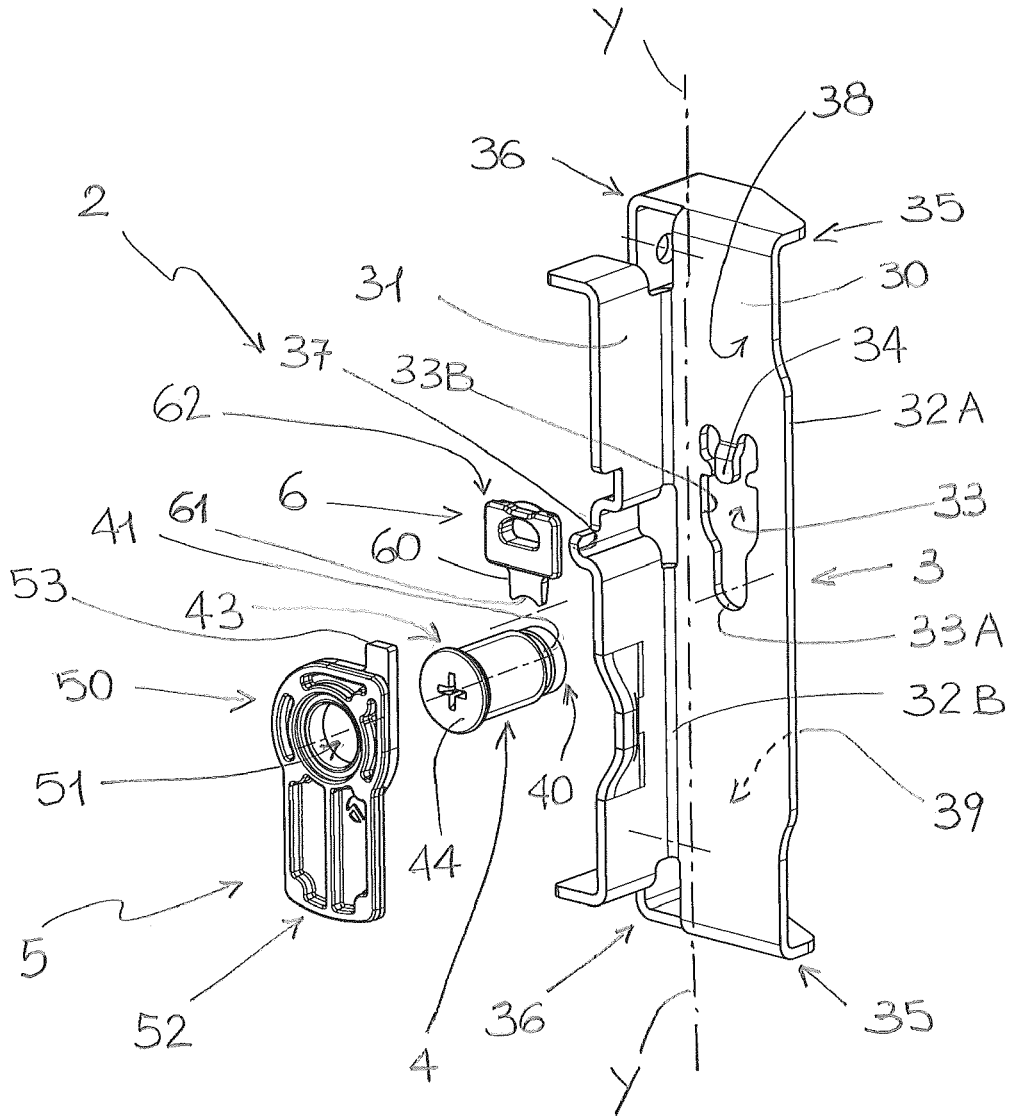


Fig. 2A

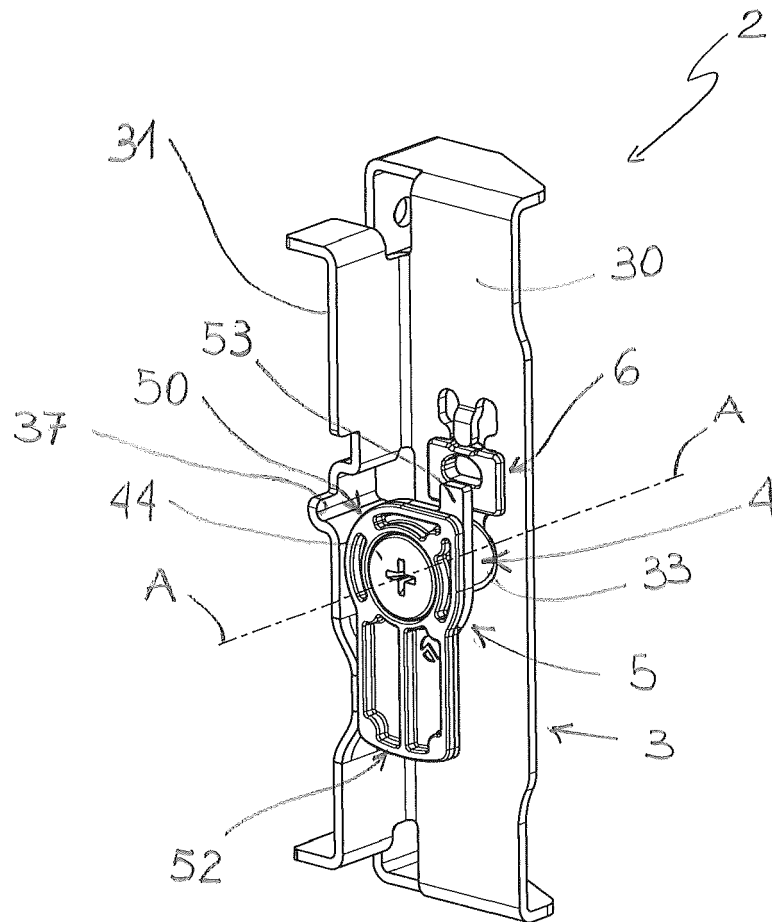


Fig. 2B

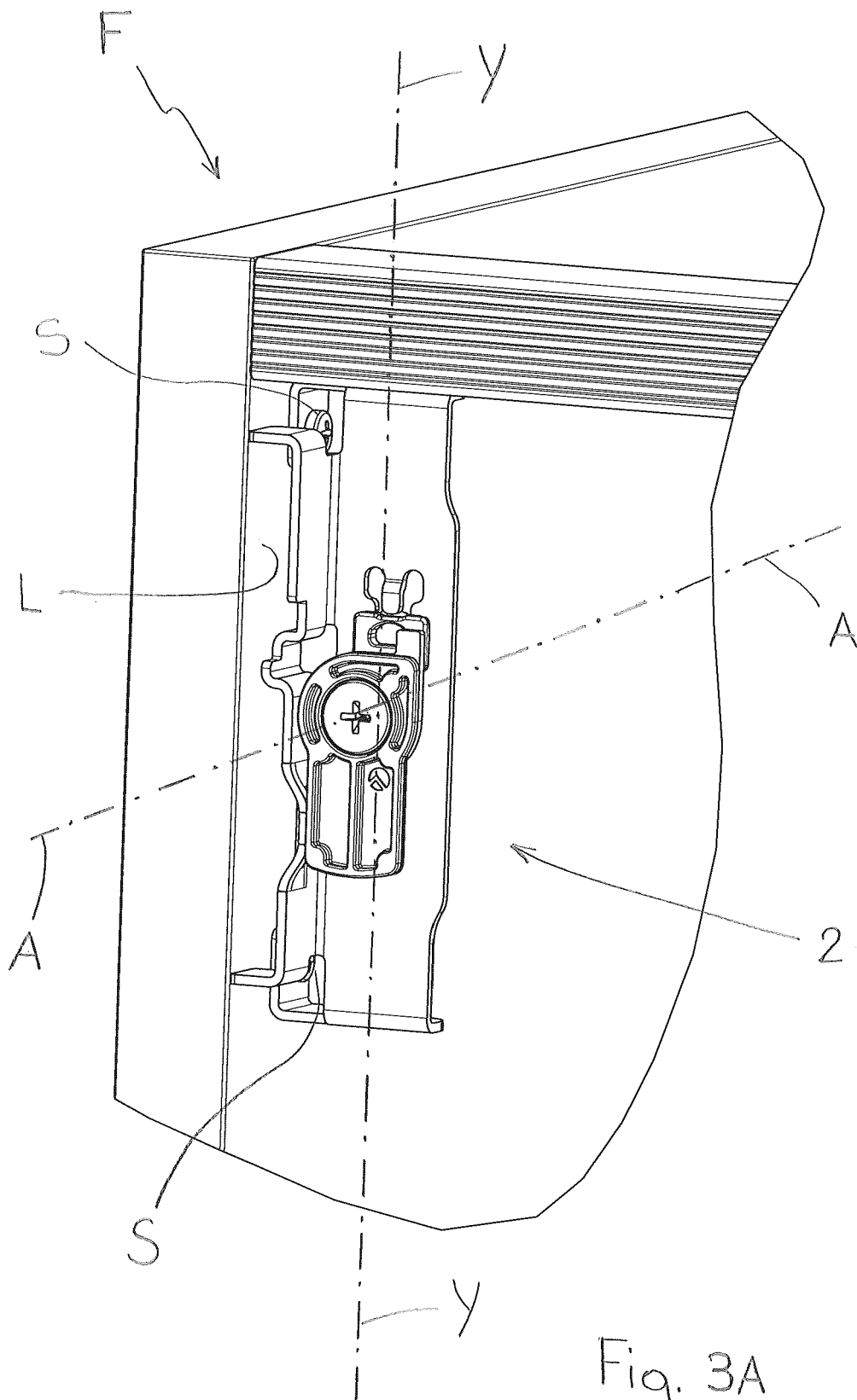


Fig. 3A

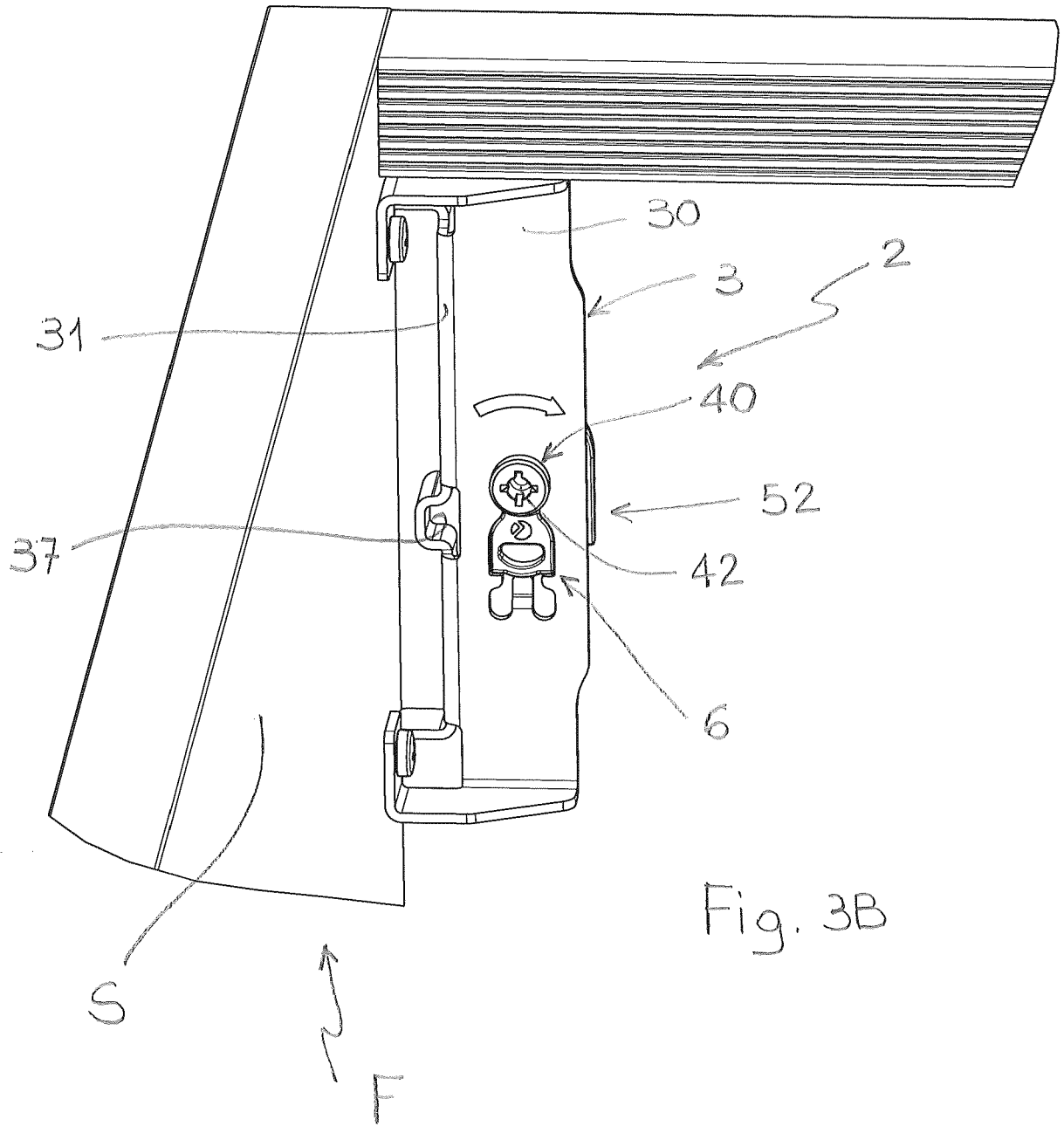


Fig. 3B

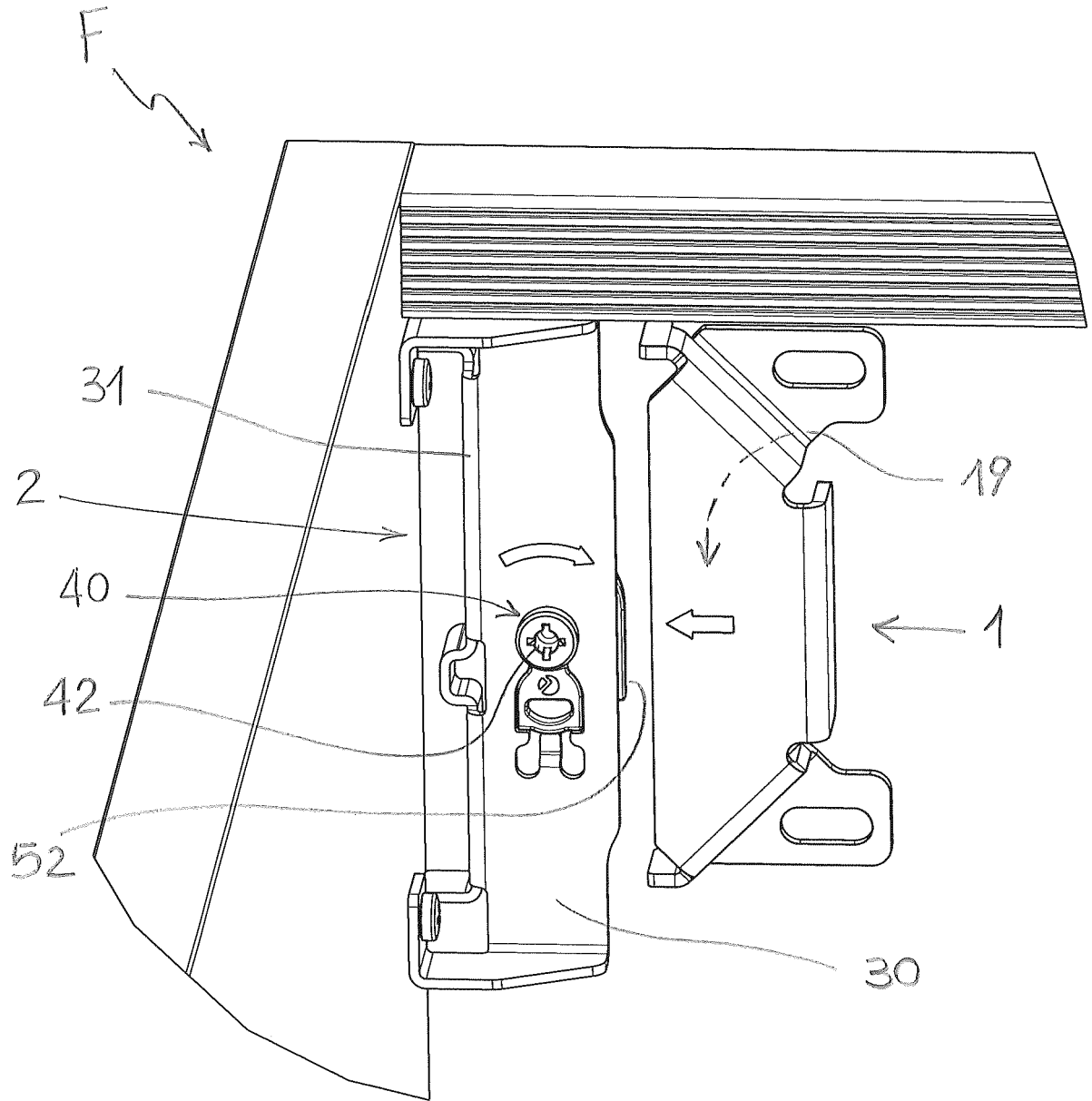


Fig. 4A

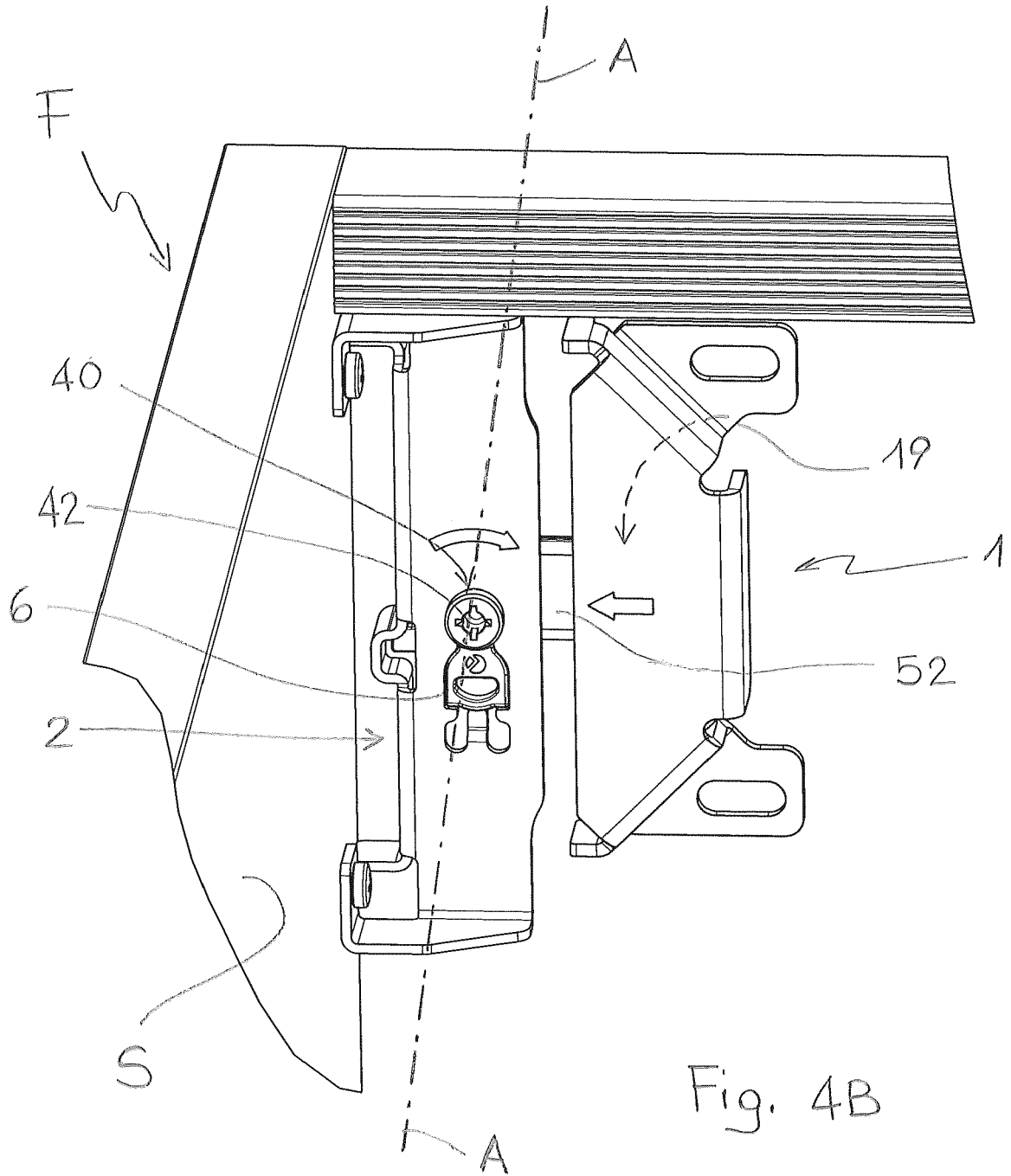


Fig. 4B

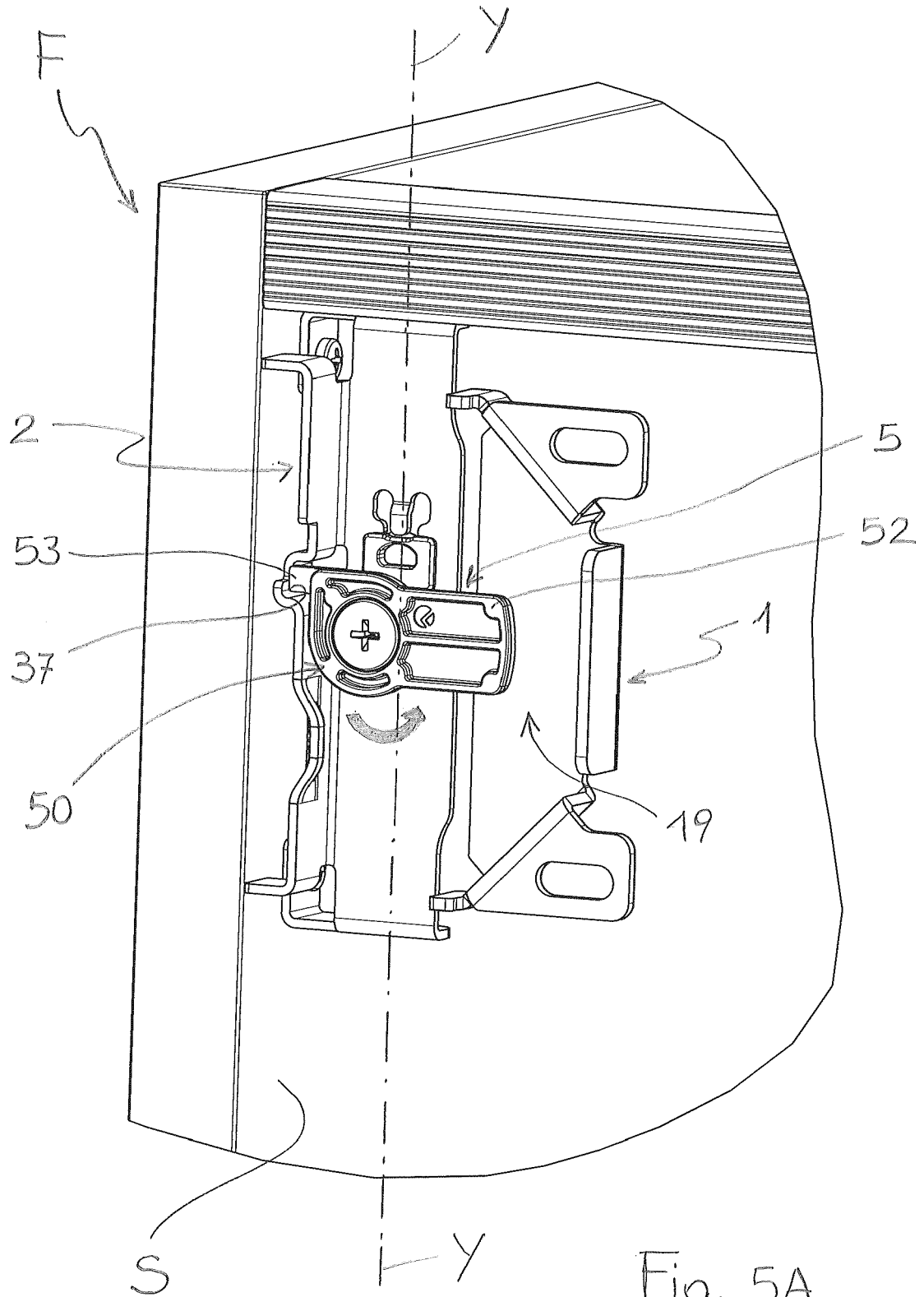


Fig. 5A

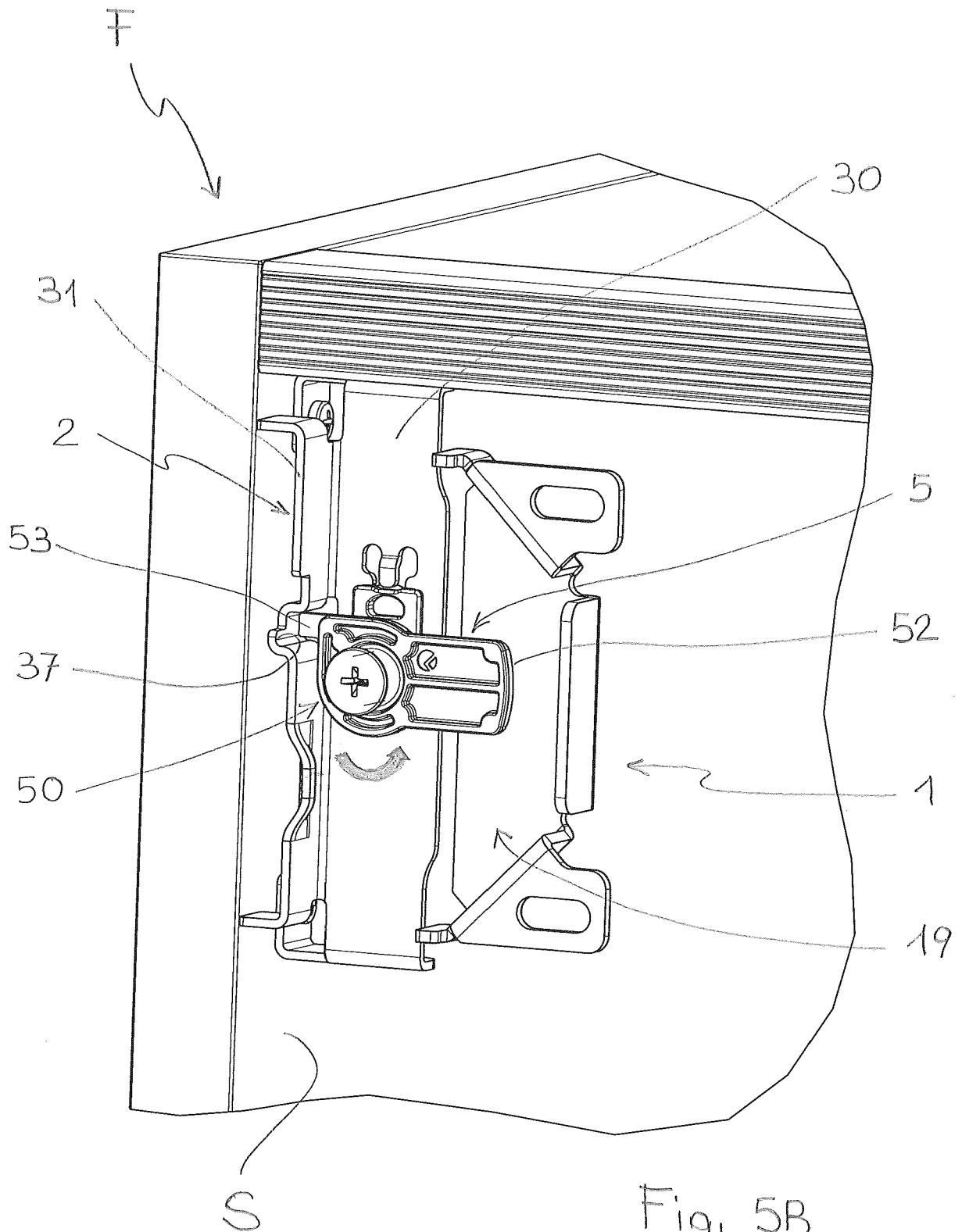


Fig. 5B

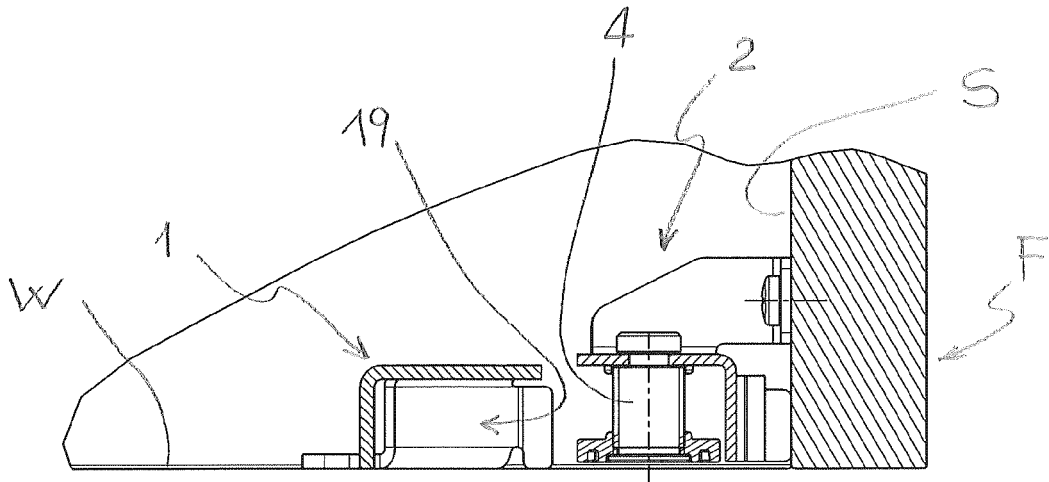


Fig. 6A

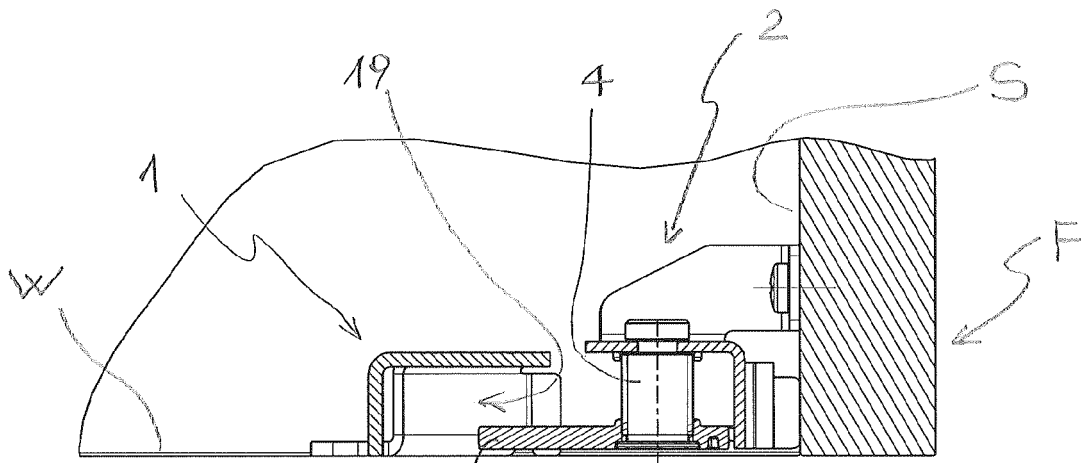


Fig. 6B

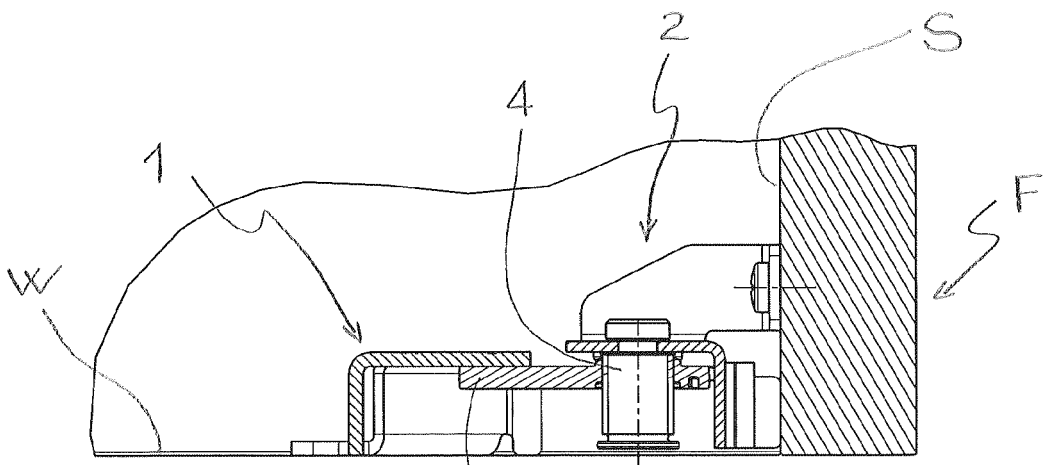
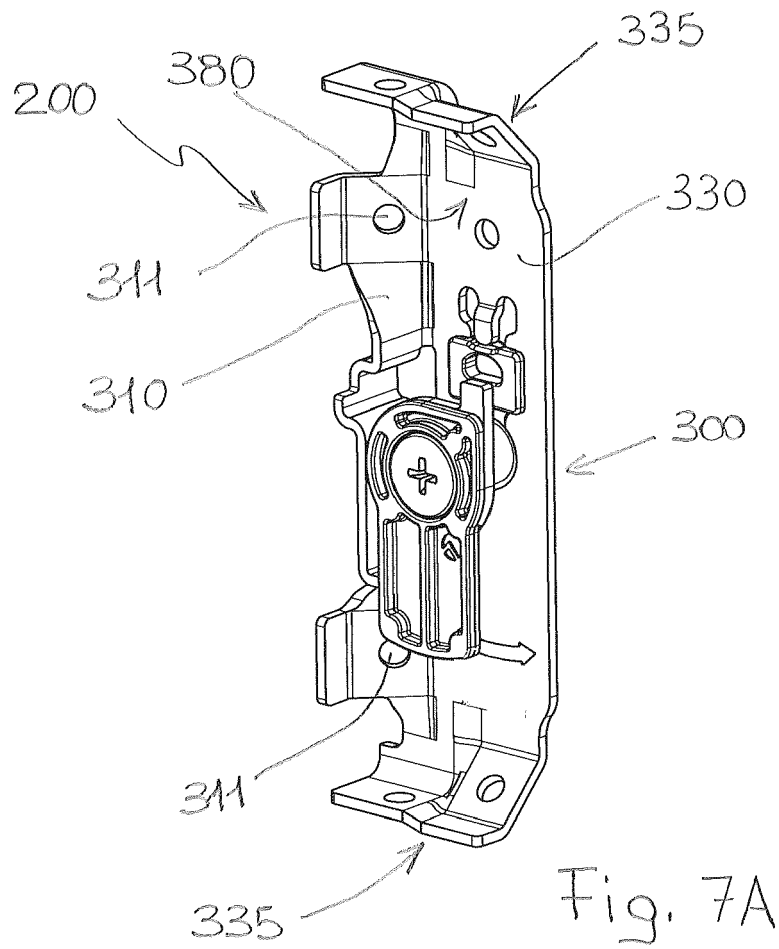


Fig. 6C



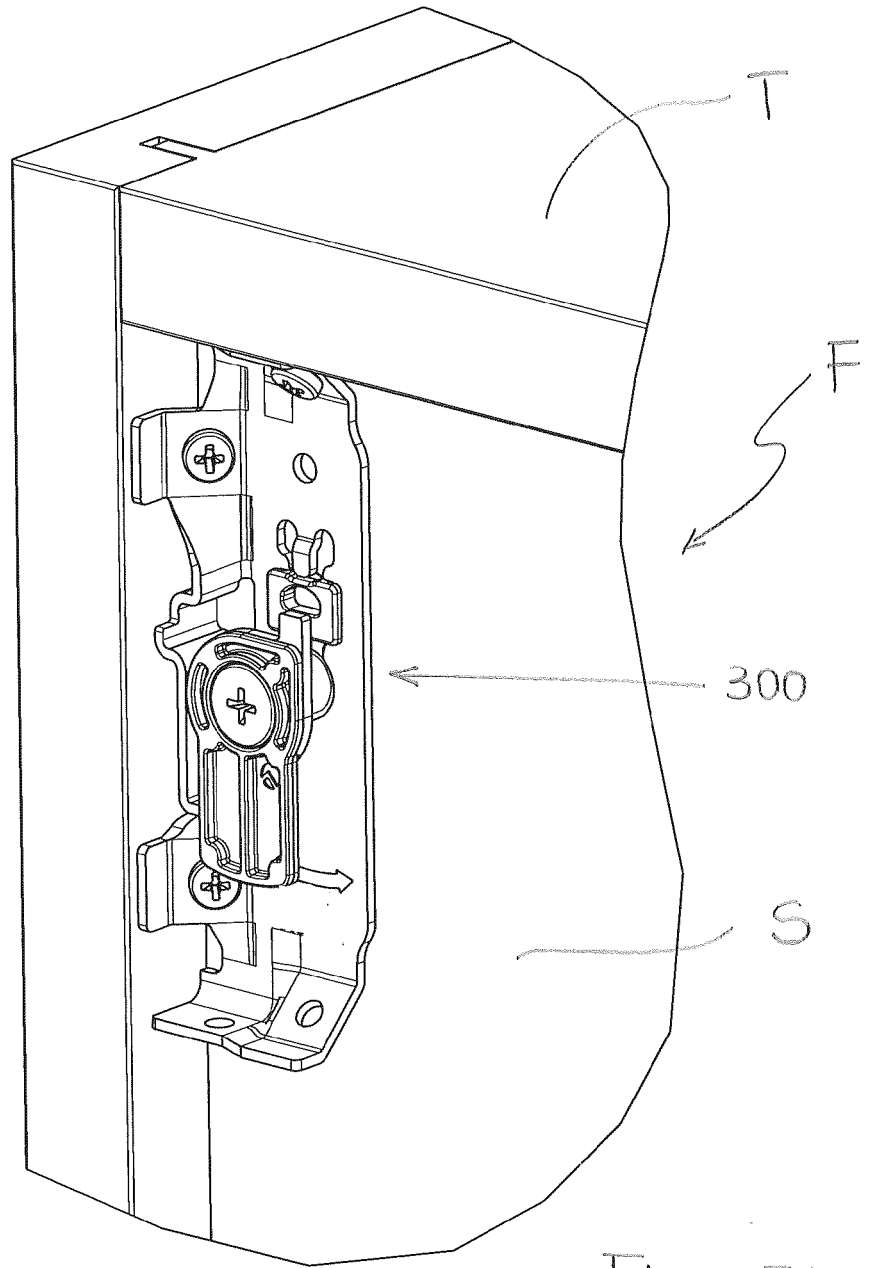


Fig. 7B

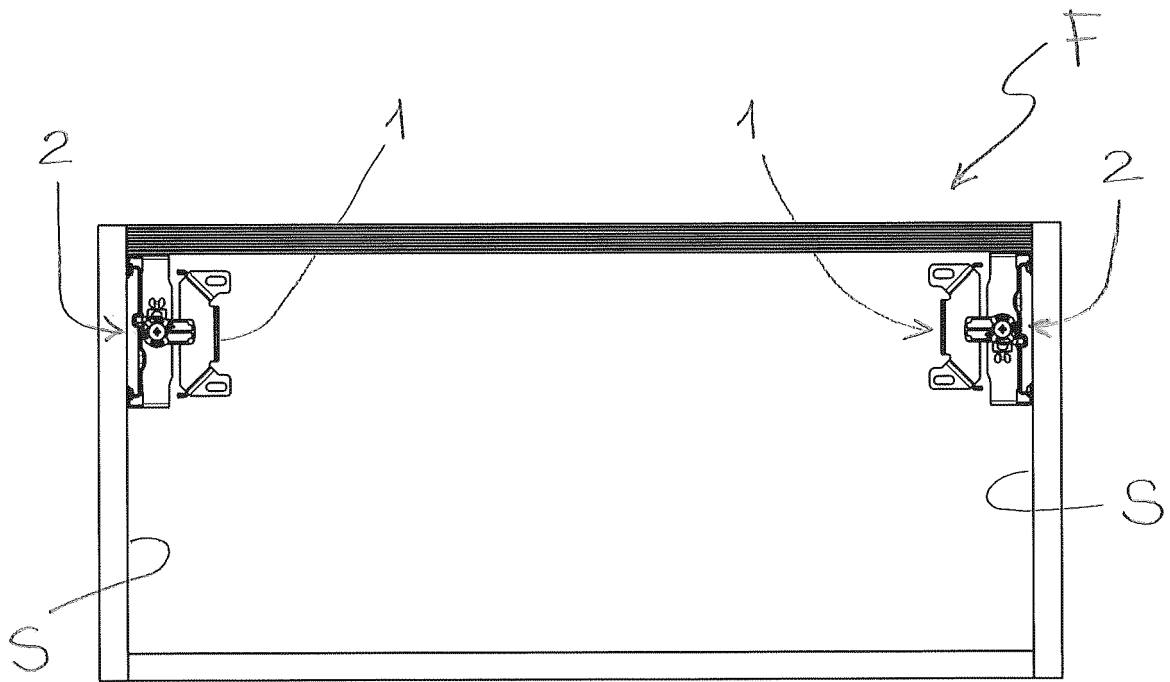


Fig. 8



EUROPEAN SEARCH REPORT

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A	<p>EP 3 400 833 A1 (LACART S R O [CZ]) 14 November 2018 (2018-11-14) * paragraph [0004] - paragraph [0024]; figures 1-14 *</p> <p style="text-align: center;">-----</p>	1-13	<p>INV. A47B95/00</p>
			<p>TECHNICAL FIELDS SEARCHED (IPC)</p> <p>A47B</p>
1		The present search report has been drawn up for all claims	
Place of search The Hague		Date of completion of the search 7 March 2022	Examiner Kohler, Pierre
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p>		<p>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</p> <p>..... & : member of the same patent family, corresponding document</p>	

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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