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(54) Title: A HOOKING DEVICE FOR CONNECTING A DRAWER TO A LONGITUDINAL GUIDE

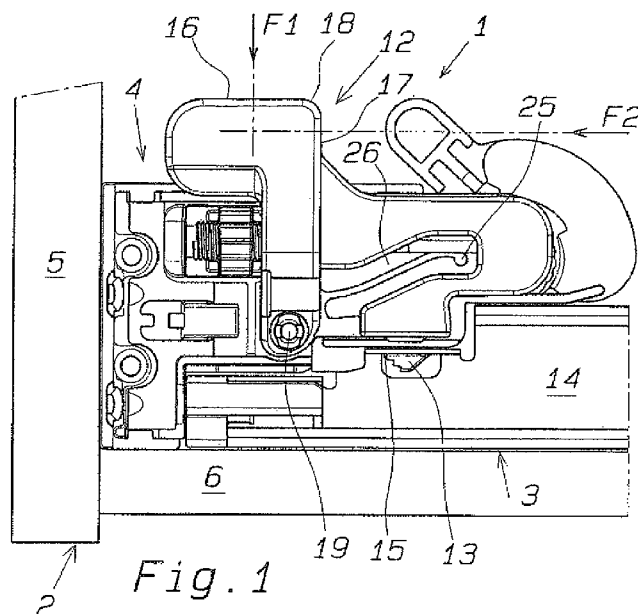


Fig. 1

(57) Abstract: The hooking device (1) for connecting drawer (2) to a longitudinal guide (3) comprises a support body (4) fixable to a front (5) and/or a bottom (6) of the drawer (2) and provided with an oscillating command lever (12) for a hooking organ (13) of the support body (4) to the guide (3), the hooking organ (13) being mobile between a hooking position and an unhooking position, the lever (12) exhibiting a first surface zone (16) and respectively a second surface zone (17) for manual gripping configured in such a way as to be selectively subjectable to a first manual activating force (F1) or respectively to a second manual activating force (F2) in reciprocally transversal directions and destined to generate an oscillation torque of the said command lever (12) in a same direction in order to bring the hooking organ (13) into the unhooking position.

DESCRIPTION

The present invention relates to a hooking device of a drawer for connecting a drawer, or another slidable component of an article of furniture, to an extractable part of a longitudinal guide for drawers or the like, which in particular is suitable for connecting the front portion of a drawer to the extractable part of a guide of a pre-assembled type.

In general, in the furnishing sector, hooking devices are commonly used for realising a connection of the front and/or the bottom of drawers to the front end of an extractable part of longitudinal guides fixable to the internal flanks of an article of furniture, which devices, when so required, further enable disengaging of the drawer from the guide rapidly by means of a simple manual command.

In particular, a hooking device of this type usually comprises a support body fixable to the front and/or to the bottom of the drawer, which body is in turn connectable to the front end of the extractable part of a guide by means of a tooth or a mobile hooking organ which projects from the body itself in order to be engageable in a hole or lateral cavity in the extractable part of the guide.

For engaging and/or disengaging the hooking organ with the guide, the device exhibits an oscillating command lever, for example in the form of a separate element rotatably supported by the support body or realised in a single body with the hooking organ and the body itself, which is arranged below the bottom of the drawer and is manually activatable in order to move the hooking organ between a hooking position and an unhooking position.

The majority of known hooking devices exhibit command levers conformed and arranged such as to be activated from the sides of the drawer, a solution which

however is not very suitable for unhooking wide drawers, where the positioning of the hands on both sides of the drawer for activating the levers is a very uncomfortable position.

Also known are hooking devices having command levers conformed and arranged in order to be activated by the front side of the drawer, which solution is however not very suitable for unhooking drawers located low down in the article of furniture, where the front of the drawer can be so close to the floor as to prevent insertion of the hands under it in order to activate the levers.

The technical objective of the present invention is to provide a hooking device of a drawer to a longitudinal guide which obviates the drawbacks existing in the prior art.

In the scope of this technical objective, a main aim of the present invention is to provide a hooking device of the above-mentioned type, which enables, in reference to the activation of the command lever, performing at the same time both an unhooking of the drawer from a front side thereof, and an unhooking from the sides thereof, according to specific requirements.

This and other aims of the invention are attained by a hooking device of a drawer to a longitudinal guide, comprising a support body fixable to a front and/or a bottom of the drawer and provided with an oscillating command lever for a hooking organ of the support body to the guide, said hooking organ being mobile between a hooking position and an unhooking position, characterised in that said lever exhibits a first surface zone and respectively a second surface zone for manual gripping configured in such a way as to be selectively subjectable to a first manual activating force or respectively to a second manual activating force in reciprocally transversal directions and destined to generate an oscillation torque of

the said command lever in a same direction in order to bring the hooking organ into the unhooking position.

The second surface zone is advantageously distinct from the first surface zone.

Said first and second surface zones are preferably provided on the converging sides of an angled portion of the lever.

Said first surface zone is preferably configured in such a way as to subject the lever to the first activating force with a perpendicular direction to the longitudinal direction of the guide, and said second surface zone is configured in such a way as to subject said lever and said second activating force with a direction that is substantially parallel to the longitudinal direction of the guide.

The first and the second surface zones are preferably comprised on a same arm of said lever.

Said first and second surface zones are preferably positioned on a part of said lever opposite said guide with respect to a fulcrum of oscillation of said lever.

Said first surface zone preferably extends from the side of said second surface zone facing towards said support body.

In a preferred embodiment said lever exhibits a hinge axis for hinging to said support body.

In this case preferably said first surface zone extends on the lever in the direction of the front of the drawer, on an opposite side to the hooking organ with respect to the hinge axis of the lever.

Further, in this case said second surface zone preferably extends on the lever on an opposite side to the longitudinal guide with respect to the hinge axis.

Further, in this case said hooking organ is preferably realised in a single piece with said lever, or it comprises a cursor supported slidably perpendicularly to the

longitudinal direction of the guide.

In a further preferred realisation mode of the invention, said lever and said support body are realised in a single piece exhibiting at least an elastically yielding portion suitable for enabling oscillation of the lever.

In this case said elastically yielding portion comprises a first and at least a second connecting tab of said lever to said support body.

The foregoing will be illustrated in the following with reference to some preferred embodiments of the invention on the basis of the accompanying figures, in which:

figure 1 is a plan view, from below, of a hooking device according to a first embodiment of the invention, in an assembled condition to a drawer and to a longitudinal guide;

figure 2 is a perspective view of the hooking device of figure 1;

figure 3 is a plan view, from below, of a hooking device according to a second embodiment of the invention, in an assembled condition to a drawer and to a longitudinal guide;

figure 4 is a perspective view of the hooking device of figure 3; and

figure 5 is a plan view from below of a hooking device according to a third embodiment of the invention, in an assembled condition to a drawer and to a longitudinal guide.

Equivalent parts in the different preferred invention will be denoted using the same numerical references.

With reference to the abovementioned figures, a hooking device 1 is illustrated, of a drawer 2 to the extractable part 14 of a longitudinal guide 3 fixed on an internal side of the flank of the article of furniture housing the drawer 2.

The hooking device 1 comprises a support body 4 positioned on the external side

of the bottom of the drawer at the corner between the front 5 of the drawer 2 and a shoulder 6 of the drawer 2.

The support body 4 exhibits a flat base with which it rests on the flat bottom of the drawer 2, a flat lateral surface 8 for abutting the front 5 of the drawer 2 and a flat lateral surface 9, perpendicular to the previous flat lateral surface 8, for abutting the shoulder 6 of the drawer 2, and exhibits holes 10 and/or 11 for fixing thereof by means of screws (not shown) to the front 5 and/or to the bottom of the drawer 2.

The support body 4 is further provided with an oscillating command lever 12 for a hooking organ 13 of the support body 4 to the guide 3.

The oscillating plane of the lever 12 is the one parallel to the flat base of the support body 4 and consequently to the bottom of the drawer 2.

The hooking organ 13 is mobile between a hooking position of the drawer 2 to the extractable part 14 of the guide 3, at which position it engages in a seating 15 afforded on the extractable part 14 of the guide 3, and an unhooking position at which it is disengaged from the seating 15.

The lever 12 advantageously exhibits a first surface zone 16 for manual gripping on which the user can exert, with his or her fingers of one hand, a traction determining a first activating force $F1$ of the lever 12, and a second surface zone 17, for manual gripping, on which the user can exert, with his or her fingers of one hand, a traction determining a second activating force $F2$ of the lever 12.

Naturally the lever 12 can be subjected selectively to the first activating force $F1$ or the second activating force $F2$.

The first surface zone 16 and the second surface zone 17 of the lever 12 are configured such that the first activating force $F1$ to which the first surface zone 16 is subjectable and the second activating force $F2$ to which the second surface zone

17 is subjectable are operative in transversal directions to one another and generate an oscillating torque of the command lever 12 in a same direction which brings the hooking organ 13 into the unhooking position.

More precisely, the first surface zone 16 is configured such as to subject the lever 12 to the first activating force F_1 with a direction that is substantially perpendicular to the longitudinal direction of the guide 3, while the second surface zone 17 is configured such as to subject the lever 12 to the second activating force F_2 with a substantially parallel direction to the longitudinal direction of the guide 3.

The first surface zone 16 and the second surface zone 17 are distinct and provided on a same arm of the lever 12 and in particular on the converging sides of an angled portion 18 of the lever 12.

The part of the lever 12 on which the first surface zone 16 and the second surface zone 17 are positioned is the part opposite the guide 3 with respect to the fulcrum of oscillation of the lever 12.

Reference will now be made in more detail to the embodiment of figures 1 and 2.

In this case the fulcrum of oscillation of the lever 12 is constituted by a hinge axis with which the lever 12 is hinged to the support body 4.

The lever 12 is oscillatable in the direction which brings the hooking organ 13 into the unhooking position in contrast to an automatic-reset elastic element 25 of the hooking organ 13 in the hooking position.

The elastic element 25 comprises a flexible-plate spring which exhibits an end solidly constrained to the lever 12 and an end resting against a wall of the body 4.

The plate spring is operative in a recess 26 of the body 4 and projects from the second surface direction 17 in a longitudinal direction towards the hooking organ

13 and posteriorly thereto.

The first surface zone 16 extends from the side of the second surface zone 17 facing towards the part of the support body 4 with which it rests laterally on the drawer 2.

The first surface zone 16 in particular extends on the lever 12 in the direction of the front 5 of the drawer 2, on an opposite side to the hooking organ 13 with respect to the hinge axis 19 of the lever 12, while the second surface zone 17 extends on the lever 12 on an opposite side to the longitudinal guide 3 with respect to the hinge axis 19 of the lever 12.

The hooking organ 13 is realised in a single piece with the lever 12.

In the situation in which the lever 12 is easily accessible only on a lateral side of the drawer 2, the user with his or her fingers of the hand exerts a traction, pressing on the first surface zone 16, in such a way as to generate the activating force F_1 with a perpendicular direction to the guide 3, which is suitable for causing the lever 12 to oscillate about the axis 19 up to bringing the hooking organ 13 from the hooking position to the unhooking position.

In the situation in which, on the other hand, the lever 12 is easily accessible only from the front side of the drawer 2, the user, with the fingers of his or her hand, exerts a traction by pressing on the second surface zone 17, such as to generate the activating force F_2 with a direction parallel to the guide 3, which is again suitable for causing the lever 12 to oscillate about the axis 19 up to bringing the hooking organ 13 from the hooking position to the unhooking position.

Reference will now be made, in more detail, to the embodiment of figures 3 and 4.

The lever 12, the hooking organ 13 and the support body 4 in this case are realised in a single piece exhibiting at least an elastically yielding portion suitable for

enabling reversible oscillation of the lever 12 from the hooked position to the unhooked position of the hooking organ 13.

The elastically yielding portion, which defines a fulcrum of oscillation of the lever 12, comprises a first tab 21 and at least a second tab 22 for connecting the lever 12 to the support body 4.

In the situation in which the lever 12 is easily accessible only from a lateral side of the drawer 2, the user, with the fingers of his or her hand, exerts a traction by pressing on the first surface zone 16, in such a way as to generate the activating force F_1 with a perpendicular direction to the guide 3, which is suitable for elastically deforming the tabs 21 and 22 which, as they flex, cause the lever 12 to oscillate about the fulcrum defined thereby up to bringing the hooking organ 13 from the hooking position to the unhooking position. On releasing the grip, the tabs 21 and 22 recuperate their elastic deformation and the lever 12 automatically returns into the hooking position of the hooking organ 13.

In the situation in which, on the other hand, the lever 12 is easily accessible only from the front side of the drawer 2, the user, with the fingers of his or her hand, exerts a traction by pressing on the second surface zone 17, such as to generate the activating force F_2 with a parallel direction to the guide 3, which is again suitable for elastically deforming the tabs 21 and 22 which, by flexing, cause the lever 12 to oscillate about the fulcrum defined thereby up to bringing the hooking organ 13 from the hooking position to the unhooking position.

Reference is now made in more detail to the embodiment of figure 5.

In this case the fulcrum of oscillation of the lever 12 is constituted by a hinge axis 19 with which the lever 12 is hinged to the support body 4.

The hooking organ 13 in this case comprises a cursor 20 supported slidably

parallel to the base of the support body 4 and perpendicularly to the longitudinal direction of the guide 3.

The cursor 20 exhibits a frontal projection 23 for hooking to the guide 3, parallel lateral guide surfaces 24, 26 engaged along a straight guide 27 fashioned in the support body 4, and a rear wall 28, which engages operatively with the end of the arm 30 of the lever 12 opposite the end in which the first surface zone 16 and the second surface zone 17 are present.

The first surface zone 16 extends on the lever 12 in the direction of the front 5 of the drawer 2, on an opposite side to the cursor 20 with respect to the hinge axis 19 of the lever 12, while the second surface zone 17 extends on the lever 12 on an opposite side to the horizontal guide 3 with respect to the hinge axis of the lever 12.

The lever 12 is oscillatable in the direction bringing the hooking organ 13 into the unhooked position in contrast with an automatic-reset elastic element 13 into the hooking position.

The elastic element 25 comprises a flexible plate spring which exhibits an end solidly constrained to the cursor 20 and is interposed between the cursor 20 and the bottom 29 of the guide 27.

In the situation in which the lever 12 is easily accessible only from a lateral side of the drawer 2, the user with the fingers of his or her hand exerts a traction by pressing on the first surface zone 16 in such a way as to generate the activating force F_1 with a perpendicular direction to the guide 3, which is suitable for causing the lever 12 to oscillate about the axis 19. By effect of the oscillation, the arm 30 of the lever 12 draws the cursor 20 in translation, which cursor 20 is brought into the unhooking position at which the elastic element 25 is loaded by deforming

elastically against the bottom 29 of the guide 27. On releasing the grip, the elastic element recuperates the deformation and automatically returns the cursor 20 into the hooking position.

In the situation in which, on the other hand, the lever 12 is easily accessible only from the front side of the drawer 2, the user, with the fingers of his or her hand, exerts a traction by pressing on the second surface zone 17 in such a way as to generate the activating force F_2 with a parallel direction to the guide 3, which is once again suitable for causing the lever 12 to oscillate about the axis 19 up to obtaining the unhooking as described herein above.

The present invention thus provides a hooking device that is particularly easy both for unhooking the drawer from a front side, and for unhooking from the sides thereof, according to specific needs.

The hooking device as it is herein conceived is susceptible to numerous modifications and variants, all falling within the scope of the inventive concept; further, all the details are replaceable from technically-equivalent elements.

In practice the materials used, as well as the dimensions, can be any, according to requirements and the state of the art.

CLAIMS

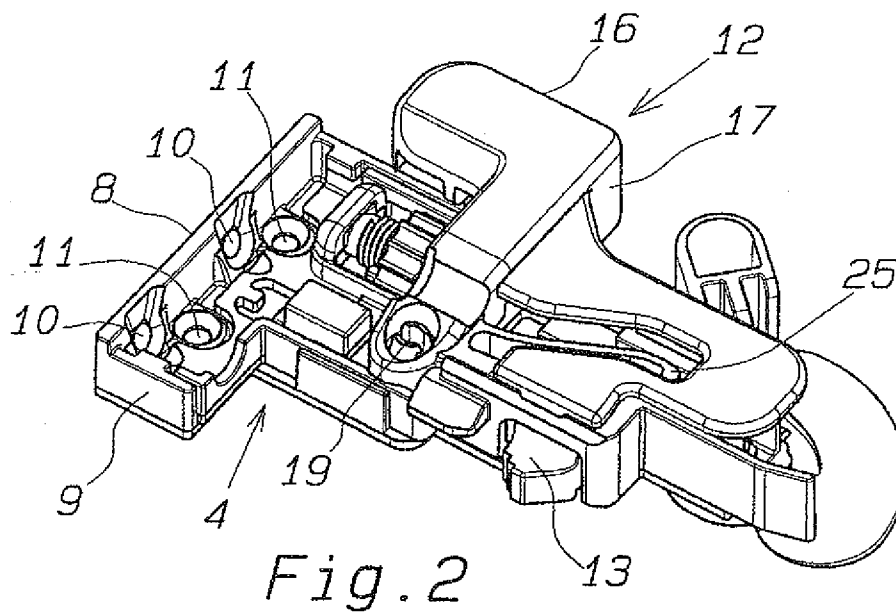
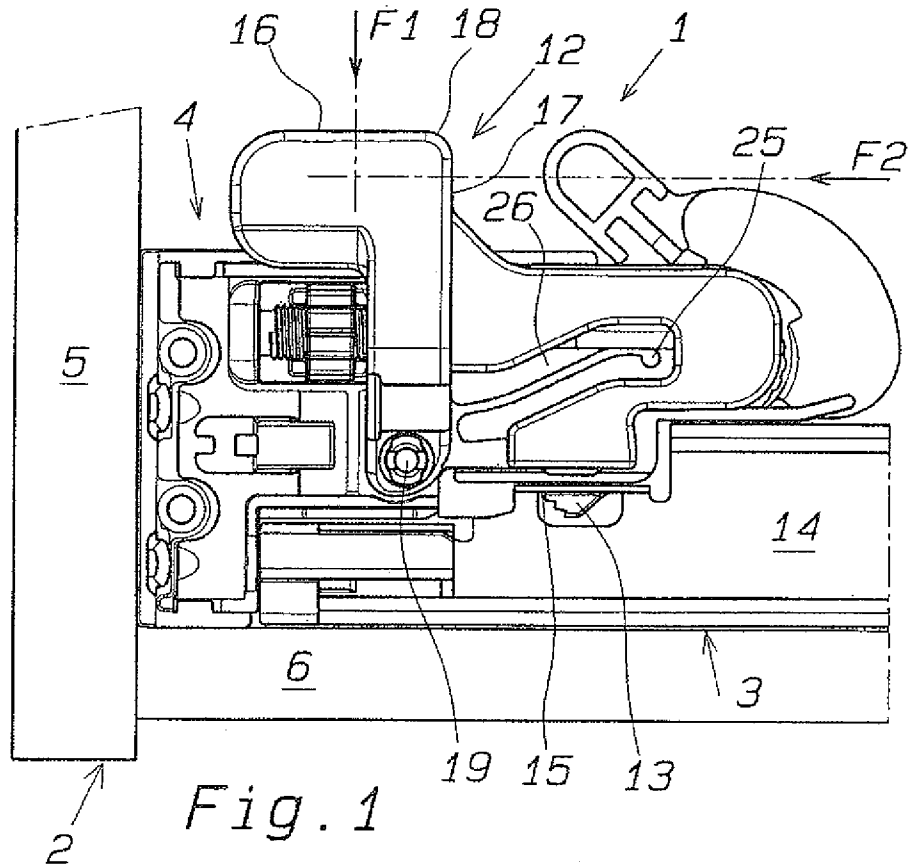
1. A hooking device (1) of a drawer (2) to a longitudinal guide (3), comprising a support body (4) fixable to a front (5) and/or to a bottom (6) of the drawer (2), and a hooking organ (13) being mobile between a hooking position and an unhooking position of the support body (4) from the guide (3), said support body (4) being provided with an oscillating command lever (12) for said hooking organ (13), characterised in that said lever (12) exhibits a first surface zone (16) and respectively a second surface zone (17) for manual gripping configured in such a way as to be selectively subjectable to a first manual activating force (F1) or respectively to a second manual activating force (F2) in reciprocally transversal directions and destined to generate an oscillation torque of the said command lever (12) in a same direction in order to bring the hooking organ (13) into the unhooking position.
2. The hooking device (1) of a drawer to a longitudinal guide according to claim 1, characterised in that said second surface zone (17) is distinct from the said first surface zone (16).
3. The hooking device (1) of a drawer to a longitudinal guide according to any one of the preceding claims, characterised in that said first surface zone (16) and said second surface zone (17) are provided on converging sides of an angled portion (18) of the lever (12).
4. The hooking device (1) of a drawer to a longitudinal guide according to any one of the preceding claims, characterised in that said first surface zone (16) is configured such as to subject said lever (12) to said first activating force (F1) in a substantially perpendicular direction to the longitudinal direction of the guide (3), and said second surface zone (17) is configured in such a way as to

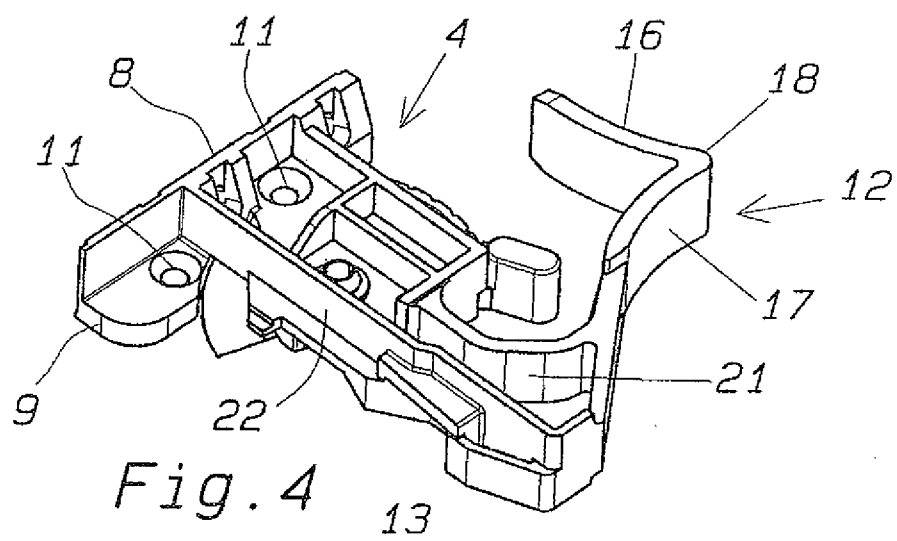
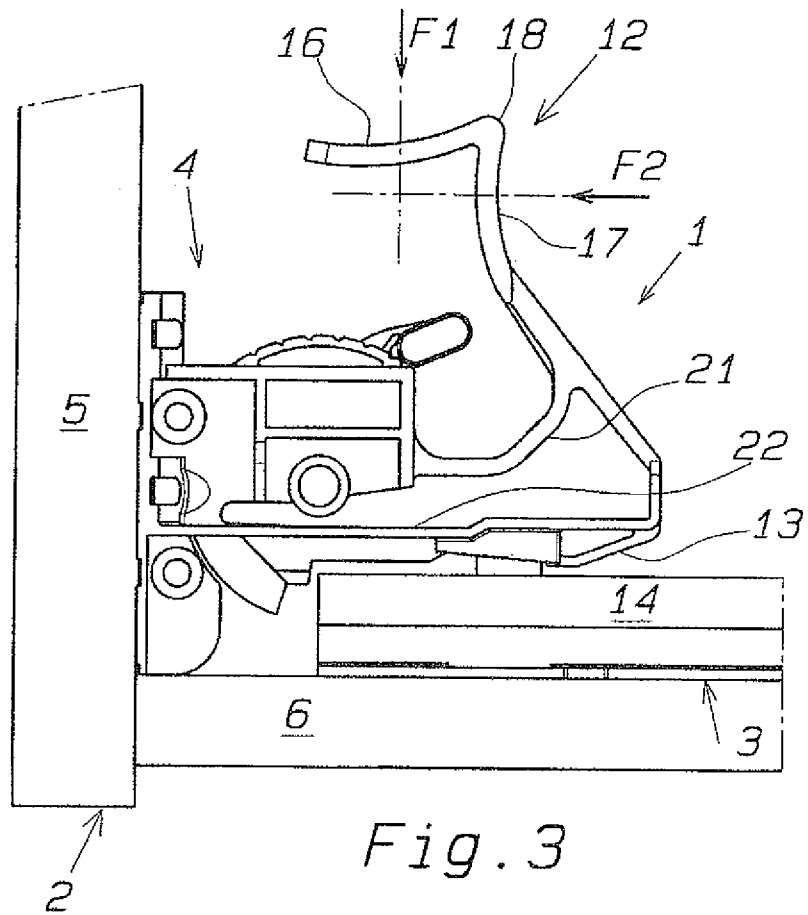
subject said lever (12) to said second activating force (F2) in a substantially parallel direction to the longitudinal direction of the guide (3).

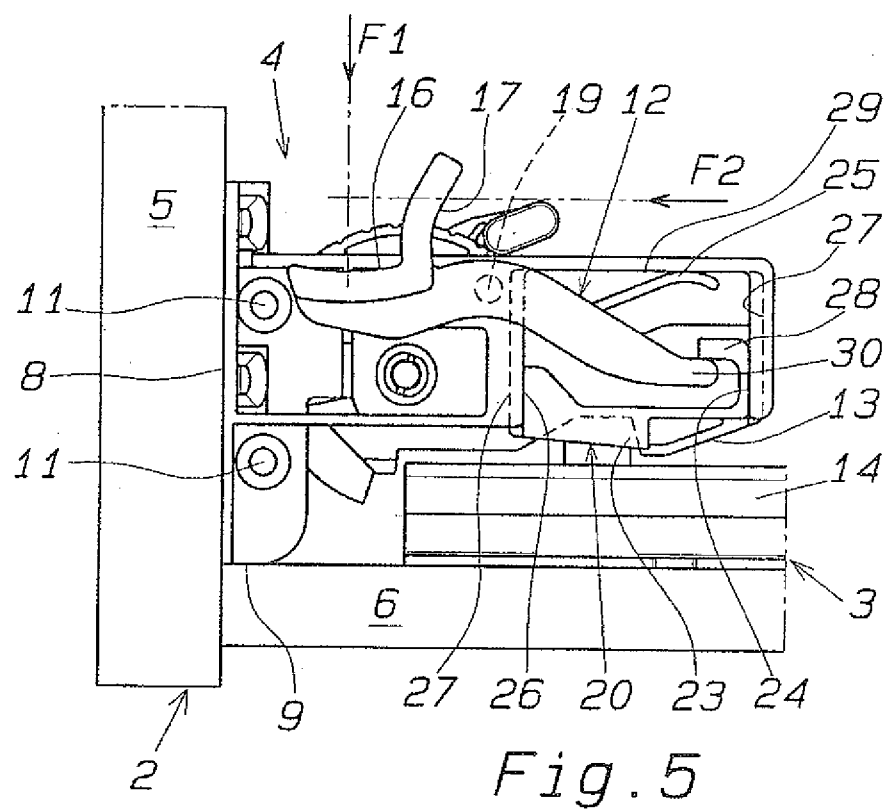
5. The hooking device (1) of a drawer to a longitudinal guide according to any one of the preceding claims, characterised in that said first surface zone (16) and said second surface zone (17) are provided on a same arm of said lever (12).
6. The hooking device (1) of a drawer to a longitudinal guide according to any one of the preceding claims, characterised in that said first surface zone (16) and the said second surface zone (17) are positioned on a part of said lever (12) which is opposite to said guide (3) with respect to a fulcrum of oscillation of said lever (12).
7. The hooking device (1) of a drawer to a longitudinal guide according to the preceding claim, characterised in that said first surface zone (16) extends from a side of said second surface zone (17) which side faces towards the support body (4).
8. The hooking device (1) of a drawer to a longitudinal guide according to any one of the preceding claims, characterised in that said lever (12) exhibits a hinge axis (19) to said support body (4).
9. The hooking device (1) of a drawer to a longitudinal guide according to the preceding claim, characterised in that said first surface zone (16) extends on the lever (12) in a direction of the front (5) of the drawer (2), on an opposite side to the hooking organ (13) with respect to the hinge axis (19) of the lever (12).
10. The hooking device (1) of a drawer to a longitudinal guide according to claim 8 or 9, characterised in that said second surface zone (17) extends on the lever

(12) on an opposite side to the longitudinal guide (3) with respect to the hinge axis (19).

11. The hooking device (1) of a drawer to a longitudinal guide according to any one of claims from 8 to 10, characterised in that said hooking organ (13) is made in a single piece with the lever (12).
12. The hooking device (1) of a drawer to a longitudinal guide according to any one of claims from 8 to 10, characterised in that said hooking organ (13) is supported slidably perpendicularly to the longitudinal direction of the guide (3).
13. The hooking device (1) of a drawer to a longitudinal guide according to any one of claims from 1 to 8, characterised in that said lever (12) and said support body (4) are realised in a single piece exhibiting at least an elastically yielding portion destined to enable oscillation of said lever (12).
14. The hooking device (1) of a drawer to a longitudinal guide according to the preceding claim, characterised in that said elastically yielding portion comprises a first tab (21) and at least a second tab (22) for connecting the said lever (12) to said support body (4).







INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2011/071376

A. CLASSIFICATION OF SUBJECT MATTER
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ADD.

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)
A47B

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 practical, search terms used)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 457 137 A1 (RIOJA CALVO) 15 September 2004 (2004-09-15) figures 2, 7, 11-14	1-11,13
X	DE 203 05 467 U1 (ALFIT AG) 12 August 2004 (2004-08-12) figure 8	1-6, 8-11,13, 14
X	DE 20 2009 003886 U1 (KING SLIDE WORKS CO LTD) 10 June 2009 (2009-06-10) figure 13	1-9,11, 13
X	DE 295 13 851 U1 (HETTICH PAUL GMBH & CO) 19 October 1995 (1995-10-19) figures 1-5 page 5, paragraph 1 - paragraph 2 -/-	1-5,8,12



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
"&" document member of the same patent family

Date of the actual completion of the international search

21 February 2012

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29/02/2012

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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2011/071376

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005/231083 A1 (GARCIE) 20 October 2005 (2005-10-20) the whole document -----	1-14

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2011/071376

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