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(54) **Anti-tipping device for drawers for cabinets**

(57) *Anti-tipping device (1) for a cabinet (2) in order to prevent the simultaneous opening of more than one drawer (3) in a cabinet (2), and provided with a vertical support guide (5) which is suitable for being fixed inside the cabinet (2) and behind the drawers (3), with a number of blocks (10) which are slidingly arranged and with a determined play (G) inside the guide (5) itself, and with an activating element (20) which is suitable for being*

arranged on a rear wall (31) of each drawer (3); a recovering element (40) being provided for each activating element (20) and being arranged between the blocks (10) in order to be moved between a neutral position, in which it is always engaged by a relative activating element (20), and a recovering position, in which it is free of the activating element (20) and prevents both the movement of the blocks (10) themselves, as well as the movement of the other recovering elements (40).

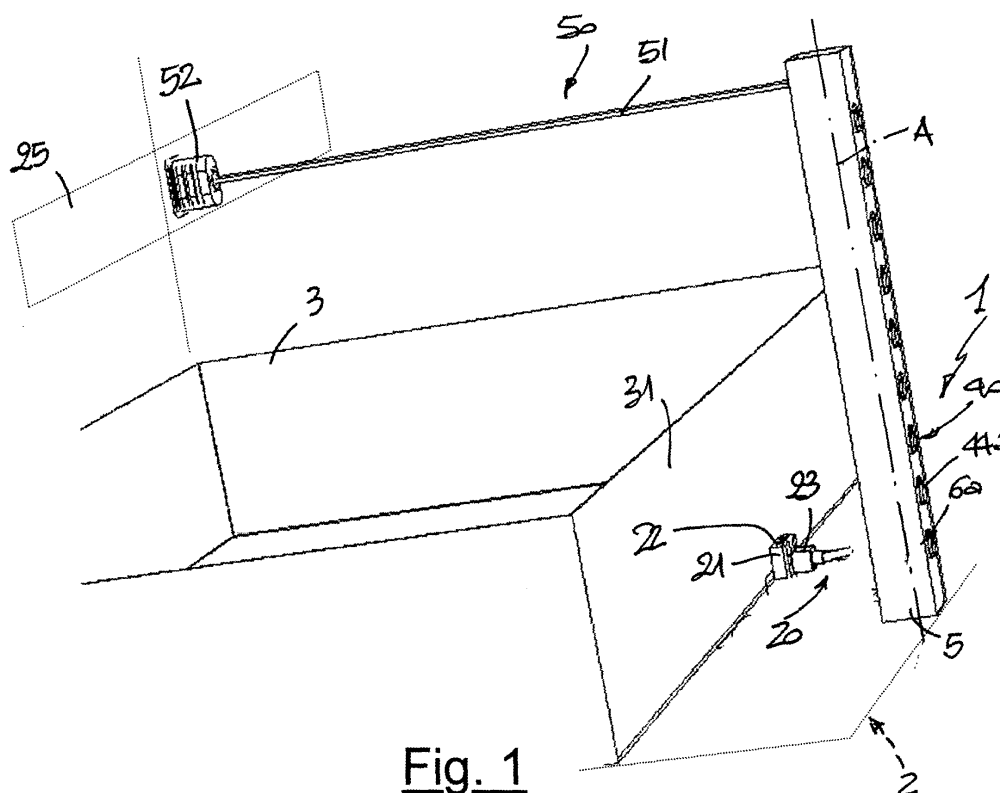


Fig. 1

Description

[0001] The present invention relates to an anti-tipping device for drawers for cabinets.

[0002] Anti-tipping devices of a well known kind are suitable for preventing the simultaneous opening of more than one drawer in the same cabinet and comprise, as described by way of an example in the American patent US 7,140,700, a vertical support guide which is suitable for being fixed inside the cabinet and behind the drawers, a number of blocks which are slidably arranged and with a determined play inside a track which is integral with the guide, a carriage for each drawer which is assembled along the guide in a position which may be regulated in correspondence with the position of the relative drawer, a mobile latch inside the relative carriage and suitable for being engaged between two consecutive blocks, and an activating element which is suitable for being arranged on a rear wall of each drawer, and which is provided with an engagement with the latch in order to activate the latch itself between an extracted disengaged position, in which the latch is arranged outside the blocks and is engaged with the activating element, and an inserted engaged position, in which the latch is free of the activating element and is arranged between two blocks in such a way as to entirely fill the available play and to prevent the insertion of the latch of the other drawers, or rather in such a way as to prevent the opening of a second further drawer.

[0003] The device which has just been described presents some disadvantages which are mainly due to the high number of components, as well as the to the interaction between these themselves, which lead to high production costs as well as to the necessity for delicate initial working in terms of setting.

[0004] The aim of the present invention is to produce an anti-tipping device for cabinets, which will permit the resolution of the above-described disadvantages in a simple and cost-effective fashion.

[0005] According to the present invention an anti-tipping device for cabinets for the prevention of the simultaneous opening of more than one drawer in a cabinet will be produced, and comprising a vertical support guide which is suitable for being fixed inside the cabinet and behind the drawers, a number of blocks which are slidably arranged and with a determined play inside the guide itself, and an activating element which is suitable for being arranged on a rear wall of each drawer; the device being characterised by the fact of comprising, for each drawer, a recovering element, which is arranged between the blocks themselves, and is mobile between a neutral position in which it is always engaged by the activating element and a recovery position, in which it is free of the activating element and prevents both the movement of the blocks themselves, as well as the movement of the other recovering elements.

[0006] The present invention will now be described with reference to the attached drawings, which illustrate a non-limiting form of embodiment of the present inven-

tion, in which:

- FIGURE 1 is a schematic perspective view, with some parts removed for reasons of clarity, of a preferred form of embodiment of the anti-tipping device according to the present invention;
- FIGURE 2 is a schematic perspective view on an enlarged scale of a detail of the device which is shown in FIGURE 1;
- FIGURES 3 and 4 illustrate, in perspective view and on an enlarged scale, respective further details of the anti-tipping device which is shown in FIGURE 1; and
- FIGURES 5 and 6 illustrate, in frontal elevation and with some parts removed for reasons of clarity, a detail of the anti-tipping device which is shown in FIGURE 1 in two different operating positions.

[0007] With reference to FIGURES 1 and 2, the number 1 indicates, in its entirety, an anti-tipping device for cabinets 2 for the prevention of the simultaneous opening of more than one drawer 3 (only one of which is illustrated).

[0008] The device 1 comprises a support guide 4, which is suitable for being fixed in a vertical position inside the cabinet 2 in correspondence with a rear panel (which is not illustrated) of the cabinet 2 itself and behind the drawers 3, and is defined by a container 5 presenting, for each drawer 3, two passing slits 6a and 6b which are obtained, respectively, in a wall 7a of the container 5 which is turned towards the above-mentioned rear panel of the cabinet 2, and in a wall 7b of the container 5 which is turned towards the drawers 3.

[0009] In addition, the device 1 comprises a number of dropping blocks 10, which are arranged one above the other by means of gravity inside the guide 4, and are suitable for sliding in relation to the guide 4 itself. As is illustrated in FIGURE 4, each block 10 presents, in the interests of an example, a substantially cubic shape, and is provided with a respective outer annular groove 11 in such a way that when it is arranged above another block 10 inside the guide 4 it can define a compartment 12 of variable dimensions along a longitudinal axis A of the guide 4 itself.

[0010] In addition, the device 1 comprises an activating element 20, which is suitable for being arranged on a rear wall 31 of each drawer 3, and comprises, in its turn, a guide 21 which is integral with the drawer 3 provided with a undercut groove 22 parallel to the axis A, and a slide 23, which is inserted inside the guide 21, and is free to run along the slide 23 parallel to the axis A.

[0011] Finally, the activating element 20 comprises a spiral shaped pin 24, which extends integrally with the slide 23 towards the guide 4, and is mobile in relation to the relative drawer 3 parallel to itself and along the axis A thanks to the interposition of the guide 21 and to the slide 23. In particular, the pin 24 extends along a respective axis B which is transverse to the axis A, and is defined

by the contemporary translation along the axis A and the rotation according to a spiral of determined pace of a square surface 25 which is transverse to the axis B itself.

[0012] According to what is illustrated in FIGURES 5 and 6, the device 1 also comprises, for each drawer 3, a recovering element 40, which is arranged between the blocks 10 inside a relative compartment 11, and is mobile between a neutral position (which is shown in FIGURE 5) and a recovery position (which is shown in FIGURE 6), in which it separates the two adjacent blocks 10 by raising not only the blocks 10, but also the elements 40 which are above a determined quantity G and are equal to the play which is permitted to the blocks 10 themselves inside the guide 4.

[0013] According to what is illustrated in FIGURE 3, the recovering element 40 is defined by a substantially parallelepiped body 41 which is delimited on one side by a cylindrical surface 42, and presenting an inner housing 43, which extends inside the body 41 with a spiral shape which is complementary to the shape of the relative pin 24, and is selectively engageable by the relative pin 24 itself. The body 41 presents, in correspondence with its own opposite ends, two outer annular-shaped borders 44a and 44b, each of which is engaged in a relative slit 6a and 6b in such a way as to arrange each body 41 itself not only at the same height, along the axis A, as the relative drawer 3, but also substantially aligned along an axis B of the relative pin 24.

[0014] Finally, the anti-tipping device 1 also comprises a general blocking device 50 of the blocks 10, of which is required the complete closure of the cabinet 2, and is provided with a return rod 51 which is inserted into an own end inside the guide 4 and into an opposite own end in a frontal wall 25 of the cabinet 2 itself. The blocking device 50 is substantially a device of a well known kind and is activated by a common lock 52 in order to prevent the blocks 20 from moving around inside the guide 4.

[0015] When, in use, the drawers 3 are closed, each pin 24 is engaged inside the relative housing 43 and the relative element 40 is arranged in its own neutral position. In the case in which the blocking device 50 may also be arranged in its own closed position, or rather in the position which prevents the sliding of the blocks 10 along the guide 4, the separation of the pins 24 from the housings 43 is in fact impossible as the rotation of the elements 40 is also blocked.

[0016] Once the blocking device 50 is open, it is possible to extract a drawer 3 with the consequent rotation of the element 40 in its own recovery position. In particular, the element 40 rotates around the relative axis B pushing towards the top not only the upper blocks 10, but also the other upper elements 40, the movement of which is possible due to the fact that the relative pins 24 can also move parallel to themselves along the axis A thanks to the guide 21.

[0017] The spiral conformation of the pins 24 and of the housings 43 makes it impossible for the pins 24 to be extracted from the housings 43 when the housings

43, or rather the relative elements 40, are not free to rotate, this condition resulting on two occasions: when the blocking device 50 is closed, or when the blocking device 50 is open and only a single drawer 3 is extracted.

[0018] It is thus obvious, from the above description, that once a drawer 3 is extracted and the relative element 40 is rotated and disengaged from the pin 24, it is impossible to extract other drawers 3 from the cabinet 2. It is also evident how such a result has been obtained with a number of element which are decidedly reduced in number and are also cost-effective to produce.

[0019] It is intended that the present invention should not be limited to the form of embodiment which is herein described and illustrated, which is to be considered as an example of a form of embodiment of the anti-tipping device for cabinets, and which may instead be subject to further modifications relating to the shape and disposition of its parts, as well as to details pertaining to construction and assembly.

Claims

1. Anti-tipping device (10) for cabinets (2) for preventing the simultaneous opening of more than one drawer (3) in a cabinet (2), and comprising a vertical support guide (5) which is suitable for being fixed inside the cabinet (2) and behind the drawers (3), a number of blocks (10) which are slidingly arranged and with a determined play (G) inside the guide (5) itself, and an activating element (20) which is suitable for being arranged on a rear wall (31) of each drawer (3); the device (1) being **characterised by** the fact of comprising, for each drawer (3), a recovering element (40), which is arranged between the blocks (10) themselves, and is mobile between a neutral position in which is always engaged by the activating element (20) and a recovering position, in which it is free of the activating element (20) and prevents both the movement of the blocks (10) themselves, as well as the movements of the other recovering elements (40).
2. Anti-tipping device according to Claim 1, **characterised by** the fact that each recovering element (40) is defined by a parallelepiped body (41), and presents a spiral-shaped inner eccentric housing (43) which is selectively engageable by the relative activating element (20), which, in turn, is provided with a spiral-shaped pin (24) which is inserted inside the relative eccentric housing when the relative drawer (3) is closed.
3. Anti-tipping device according to Claim 2, **characterised by** the fact that the activating element (20) comprises a guide (22) which is integral with the drawer (3), and a slide (26) which is integral with the relative spiral-shaped pin (24).

4. Anti-tipping device according to any of the preceding Claims whatsoever, **characterised by** the fact that the said blocks (10) are arranged by dropping inside the support guide (5), and define in relation to each other, a housing (12) for receiving a relative recovering element (40). 5
5. Anti-tipping device according to any of the preceding Claims whatsoever, **characterised by** the fact of comprising a general blocking means (50) of the said blocks (10) for the complete closure of the drawers (3) of the cabinet (2); the general blocking means (50) comprising a return rod (51) which is inserted into an end inside the guide (5) and into an opposite end in a frontal wall (25) of the cabinet (2). 10 15

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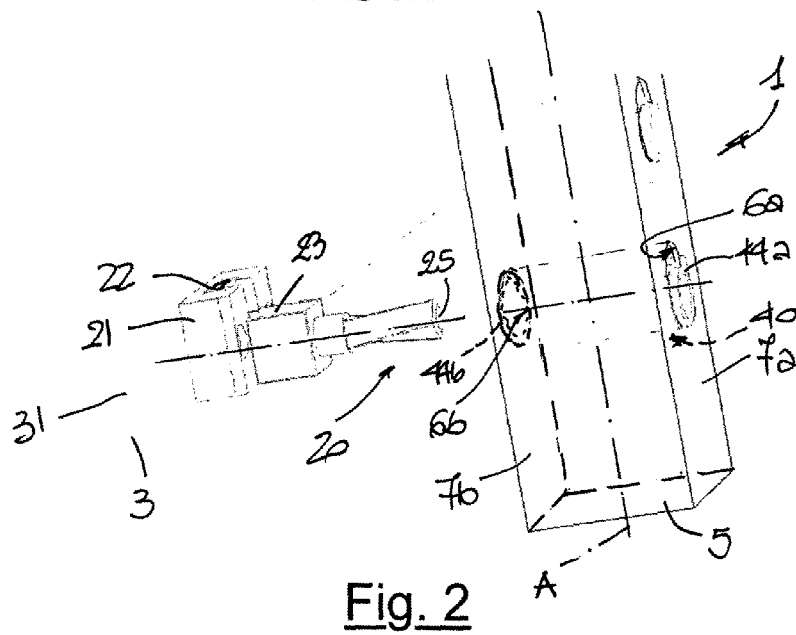
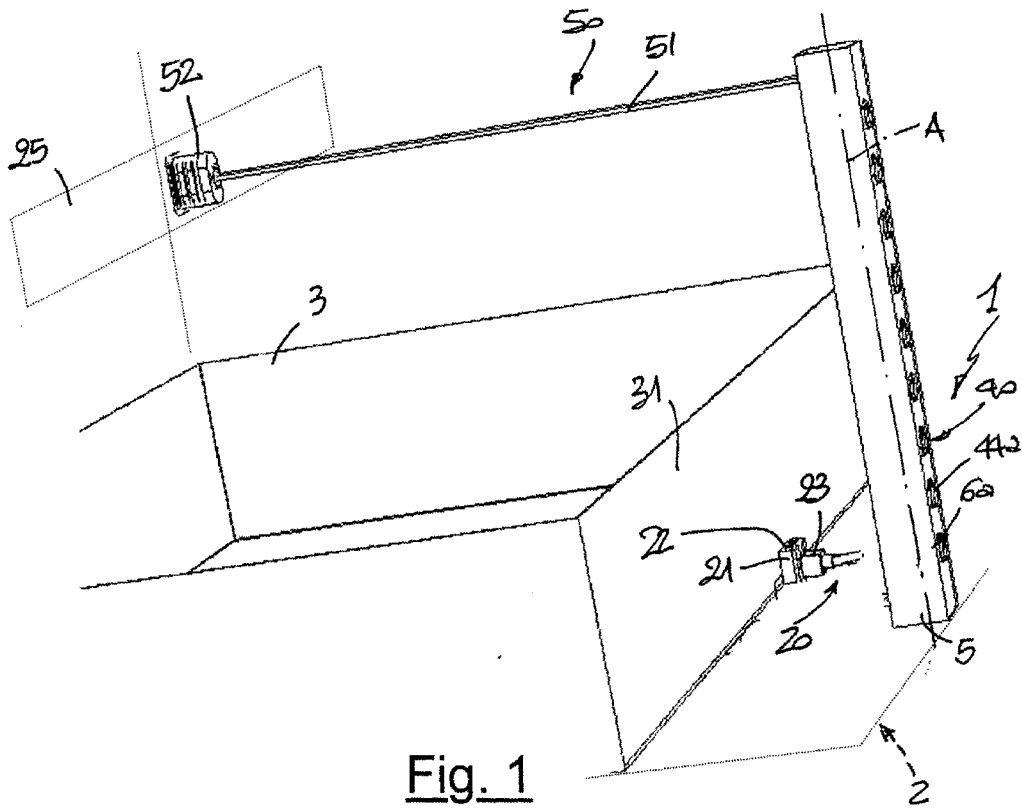
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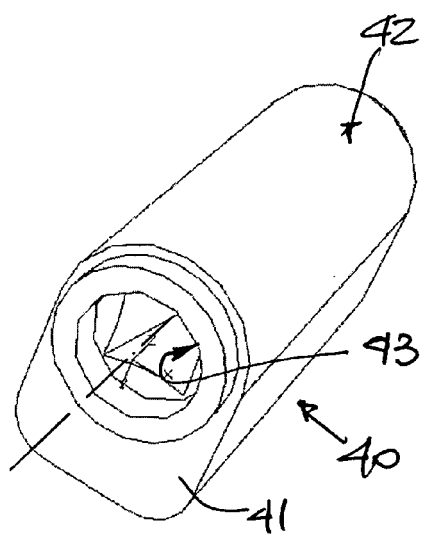


Fig. 3

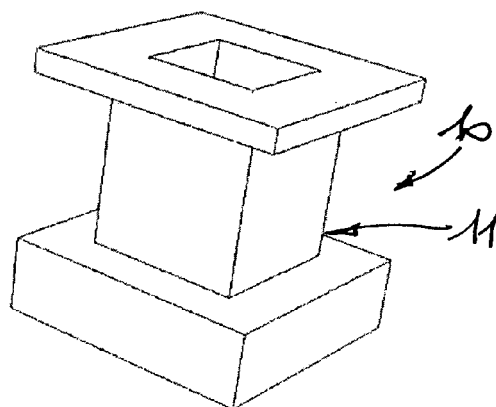


Fig. 4

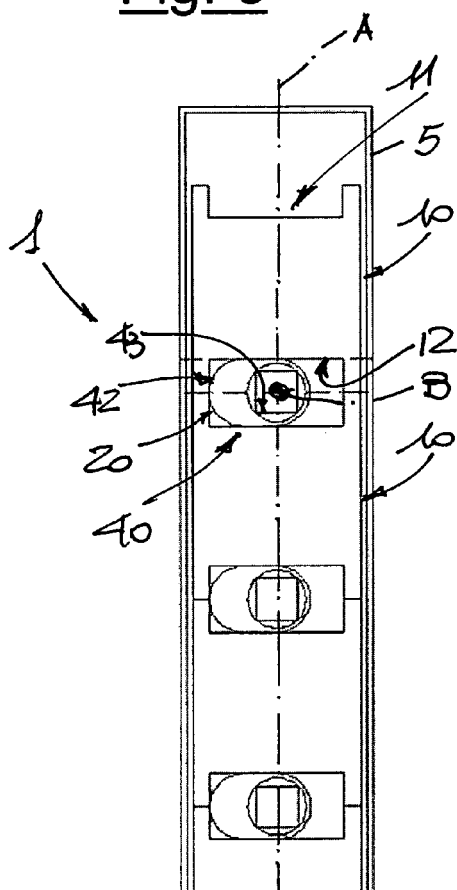


Fig. 5

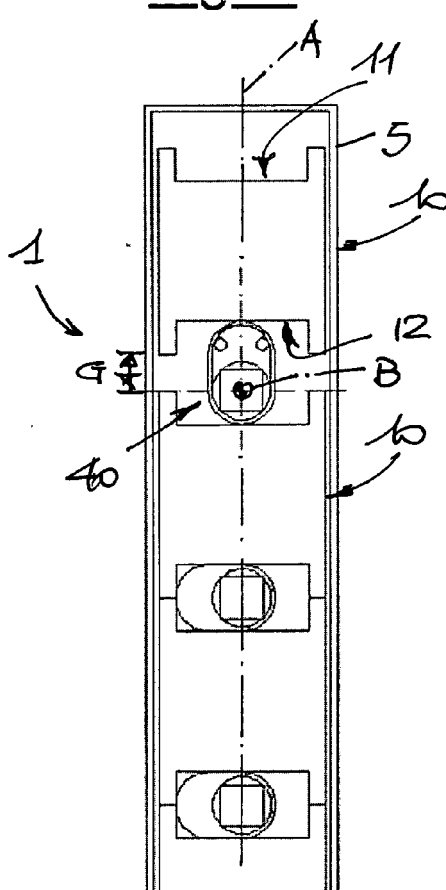


Fig. 6



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 07 02 0767

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 27 March 2008	Examiner Cruyplant, Lieve
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			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 07 02 0767

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