



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
06.05.2009 Bulletin 2009/19

(51) Int Cl.:
E05B 65/46 (2006.01)

(21) Application number: **08075797.4**

(22) Date of filing: **02.10.2008**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR
Designated Extension States:
AL BA MK RS

(30) Priority: **10.10.2007 IT TO20070715**

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(54) **A security device for a piece of furniture with drawers, having wedges against toppling**

(57) A security device for a piece of furniture with drawers, which comprises for each drawer (11,12,13,14) a member, a so-called wedge (21,22,23,24), applied sidewise to the drawer and having a profiled groove extending from a proximal end portion to a distal end portion which is situated at a level different from the level of the proximal end portion, and comprises a blockage rod (1) mounted in the piece structure, slidable along the vertical direction and provided with a number of protruding pins (3), each pin being suitable for engaging the profiled groove of the wedge of a drawer, all these pins (3) facing the proximal end portion of the profiled groove of the corresponding wedge (21,22,23,24) when all drawers are closed, characterized in that each profiled groove of the wedge (21,22,23,24) of a drawer has a path different from the paths of the profiled grooves of all other wedges (21,22,23,24), whereby an attempt of simultaneously opening more than one drawer (11,12,13,14) involves that the blockage rod (1) is biased to effect displacements that are not mutually compatible.

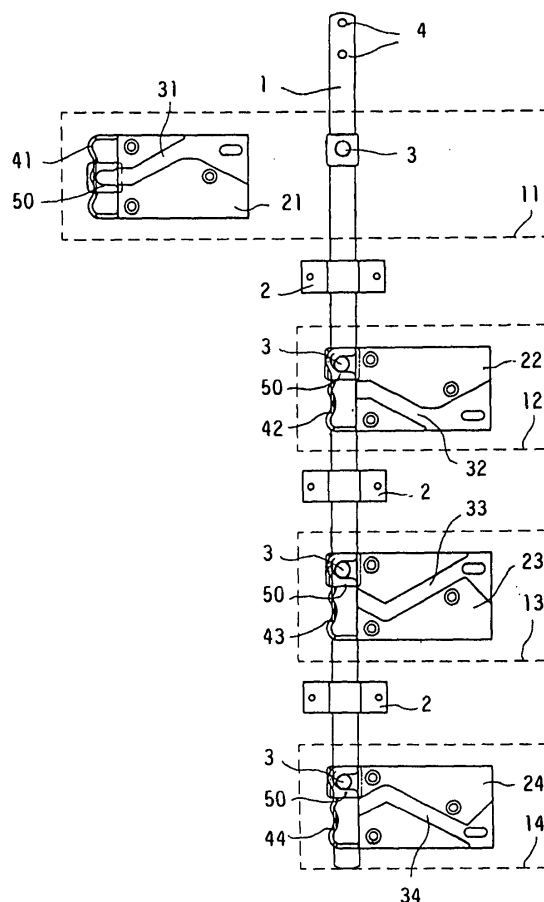


FIG. 4

Description

[0001] The subject of the present invention is a security device for a drawer chest, a filing cabinet or a similar piece of furniture. By these denomination are intended cabinets, mainly for offices, possibly of metal, which comprise a fixed structure and a number of superimposed drawers that can be opened by sliding on guides.

[0002] A problem posed by this kind of cabinets is that, when two or more drawers are moved into the open position, the displacement of the general barycentre can cause the cabinet to topple, thus involving trouble or danger of wounding for the user. Therefore, for the sake of security, have been developed devices against the toppling suitable for preventing, when a drawer is in the open position, the opening of any other drawer and, therefore, the subsequent toppling of the cabinet.

[0003] A security device for cabinets with drawers, which is very diffused mainly because it is simple and inexpensive, is the so-called device with wedges against the toppling. In this device, each drawer is provided sideways of a profiled member, customarily called "wedge", and the cabinet structure carries a blockage rod that is vertically sliding and is provided with a number of protruding pins; each pin engages the profiled portion of the wedge of a drawer in such a way that, in the rest position (namely, when all drawers are closed) these pins do not hinder the opening of the drawers, but the displacement of a drawer into its opened position, due to the profile of its wedge, causes the longitudinal displacement of the blockage rod, moving the same into a position in which it hinders the opening of the other drawers. In the known embodiments of this device, the wedges of all drawers are mutually identical.

[0004] The described device is generally satisfactory, but it has a drawback. In effect, after a drawer has been opened, the opening of the other drawers is effectively prevented, however, if two or more drawers are opened simultaneously, the wedges of the drawers in the course of opening, being all profiled in the same manner, cooperate in causing an identical displacement of the blockage rod, and therefore their displacement is in no way hindered. Therefore, the opening of further drawers will then be prevented, but the simultaneous opening of two or more drawers has not been hindered, and the toggling of the cabinet can take place.

[0005] Other kinds of security devices for cabinets with drawers have been developed, in which also the opening of two or more drawers by a simultaneous action is prevented, but these devices have a complex structure and therefore they are noticeably more expensive than a security device having wedges against toppling. For this reason there is a demand for security devices with wedges against toppling, but this demand is accompanied by a request for an improvement suitable for correcting the above drawback.

[0006] In these circumstances, the object of the present invention is to provide a security device for a

cabinet with drawers, of the kind using wedges against toppling, which should not be more complex and expensive than the known embodiments of these devices, but should be free from the stated drawback.

[0007] According to the invention, this object is attained by a security device for a piece of furniture with drawers, which comprises for each drawer a member, a so-called wedge, applied sidewise to the drawer and having a profiled groove extending from a proximal end portion to a distal end portion which is situated at a level different from the level of the proximal end portion, and comprises a blockage rod mounted in the piece structure, slidable along the vertical direction and provided with a number of protruding pins, each pin being suitable for engaging the profiled groove of the wedge of a drawer, all these pins facing the proximal end portion of the profiled groove of the corresponding wedge when all drawers are closed, characterized in that each profiled groove of the wedge of a drawer has a path different from the paths of the profiled grooves of all other wedges, whereby an attempt of simultaneously opening more than one drawer involves that the blockage rod is biased to effect displacements that are not mutually compatible.

[0008] In this way, because in the rest position all pins of the blockage rod are facing the proximal end portions of the profiled grooves of the wedges of all drawers, each drawer can be singularly opened, and during this opening the blockage rod, of which a pin slides within the profiled groove of the wedge of the drawer in the course of opening, effects displacements determined by the path of the profiled groove of said wedge, and stops, after the distal end portion of the wedge has passed, in a position in which the pins of the blockage rod do not face the proximal end portions of the profiled grooves of the wedges of all other drawers, which therefore cannot be opened, as according to the known technique.

[0009] However, in the device of the invention, an attempt to simultaneously opening two (or more) drawers is allowed on its commencement but, as soon as the pins of the blockage rod, sliding within the profiled grooves of the wedges of the drawers in the course of simultaneous opening, come to correspond to a position in which initiates a path difference between the profiled grooves of the wedges, the pins of the blockage rod are biased to displacements that are not mutually compatible, and as a consequence all the drawers in the course of simultaneous opening are blocked. This blockage condition is maintained until all drawers are displaced again in their closure positions; thereafter it is once again possible the opening of a single drawer.

[0010] Preferably, the proximal end portion of the profiled groove of each wedge has a preestablished position that is identical for all drawers. In this way, the position of each drawer within the cabinet is not critical; in other words, the various drawers can be installed at will into the cabinet.

[0011] Preferably, the profiled groove of each drawer is formed by several subsequent stretches, each stretch

can be parallel to the displacement direction of the drawer or inclined upwards or inclined downwards, and the various stretches forming the groove may have different extensions. These possible differences allow easily providing the needed number of wedges (which should correspond to the number of drawers present in the cabinet) that have different profiled grooves.

[0012] Preferably, each wedge comprises a slide vertically displaceable that engages the corresponding pin of the blockage rod when the drawer is situated in its closure position, and the displacement of this slide among its different positions is braked. In this way the blockage rod, whose pins are engaged in the slides of the closed drawers, is kept in the position that it takes after a drawer has been opened, and any accidental displacement of the rod is prevented.

[0013] Preferably, each wedge has an elastic portion which cooperates with the corresponding slide and is so shaped as to determine several stop positions of the slide. In this way the slides can be effectively kept in their various positions by opposing to their displacements a moderate snap action.

[0014] According to the circumstances, the device of the invention can be installed on a single side of the cabinet with drawers or on both its sides.

[0015] To the device of the invention may advantageously be added, in a manner per se known, a lock mechanism arranged for blocking the rod displacement in a blocking position and therefore, when needed, for preventing all drawers from being opened.

[0016] These and other features, objects and advantages of the subject of the present invention will appear more clearly from the following description of an embodiment, being a non limiting example, with reference to the appended drawings, wherein:

Figure 1 represents a front view, taken along the displacement direction of the drawers, of a blockage rod whose pins are inserted in the slides of four drawers, which are all in the closed position.

Figure 2 shows the same parts of Figure 1 in a side view, taken perpendicularly to the displacement direction of the drawers, direction which is parallel to the drawing plane of this figure.

Figure 3 still represents the same parts of Figures 1 and 2, but viewed along an inclined direction.

Figure 4 is a view similar to Figure 2, wherein the first drawer from above has been displaced from the closure position.

Figure 5 is a view similar to Figure 2, wherein the second drawer from above has been displaced from the closure position.

Figures 6 and 7 show in perspective two wedge members, specifically the third and the fourth from above according to Figure 2.

Figures 8 and 9 show in perspective a slide, viewed along two different directions.

[0017] With reference to Figures 1 to 5, reference 1 designates a blockage rod, which is mounted slidably along its own longitudinal vertical direction within the structure of a drawer cabinet. The blockage rod 1 slides in supporting members 2 applied to the inner face of a side wall of the cabinet (not represented), which wall is parallel to the drawing plane of Figure 2. The blockage rod 1 has a number of protruding pins 3 intended to cooperate with the wedges of the cabinet drawers. Additionally, rod 1 can have transmission members, such as the pivots 4, intended to cooperate with a lock device (not represented) for allowing blocking in the closed position all drawers. This lock device is per se well known and will not be described in detail.

[0018] In Figures 1 and 2 there are shown in phantom four superimposed drawers 11, 12, 13, 14, which can slide on guides in a manner per se well known, and are slidable for opening along a direction which is parallel to the drawing plane of Figure 2 and is perpendicular to the blockage rod 1. Each drawer 11, 12, 13, 14 is equipped on a side portion (or if needed on both side portions) with a member, a so-called wedge, respectively 21, 22, 23, 24, in which there is formed a profiled groove, respectively 31, 32, 33, 34. Moreover, each wedge has a portion 41, 42, 43, 44 which is corrugated and elastically deformable and retains a slide 50, better represented in Figures 8 and 9, that can take, with respect to the corresponding wedge, a centered position (as in Figure 2), a position displaced upwards (as in Figure 4) or a position displaced downwards (as in Figure 5). In each position, the slide 50 is retained against accidental displacements by the corrugated and elastic corresponding portion 41, 42, 43 or 44. Each slide 50 has a cavity 51 that is open on the side facing the closure position of the drawer, namely facing the blockage rod 1, and is suitable for receiving a pin 3 of the blockage rod 1. The path of the profiled groove of each wedge is more clearly shown, for the wedges 23 and 24 taken as examples, in Figures 6 and 7.

[0019] The profiled groove 33 of wedge 23 (Figure 6) has two portions: the first portion 33' extends from the proximal end 33° to an intermediate point 33" of the wedge, and the second portions 33''' extends from the intermediate point 33" up to the distal end 33"". The proximal end 33° of this groove is situated at a level corresponding to the centered position of slide 50, as determined by the corrugated elastic portion 43 of the wedge, the first portion 33' of the groove extends inclined downwards, the second portion 33''' of the groove extends inclined upwards, and the distal end 33"" of the groove is situated at a level corresponding to the position displaced upwards of slide 50, as determined by the corrugated elastic portion 43 of the wedge.

[0020] On its turn, the profiled groove 34 of wedge 24 (Figure 7) has two portions: the first portion 34' extends from the proximal end 34° to an intermediate point 34" of the wedge, and the second portions 34''' extends from the intermediate point 34" up to the distal end 34"". The proximal end 34° of this groove is situated at a level cor-

responding to the centered position of slide 50, as determined by the corrugated elastic portion 44 of the wedge, the first portion 34' of the groove extends inclined upwards, the second portion 34'' of the groove extends inclined downwards, and the distal end 34''' of the groove is situated at a level corresponding to the position displaced downwards of slide 50, as determined by the corrugated elastic portion 44 of the wedge.

[0021] Because, according to the invention, the profiled grooves of the various wedges should be all different from one another, the first portion of each groove can be horizontal (as it is represented for the wedges 21 and 22) or inclined downwards (as it is represented for wedge 23) or else inclined upwards (as it is represented for wedge 24); on its turn, the second portion of each groove can be inclined upwards (as it is represented for the wedges 21 and 23) or inclined downwards (as it is represented for the wedges 22 and 24) or else it can also be horizontal. The proximal end of all grooves is situated at the level of the centered position of slide 50, whereas the distal end of some grooves can be situated in correspondence of the upwards displaced position of cursor 50 (as it is represented for the wedges 21 and 23) or it can be situated in correspondence of the downwards displaced position of cursor 50 (as it is represented for the wedges 22 and 24). On the contrary, said distal end can never be situated in correspondence of the centered position of slide 50, a position to which correspond the proximal ends of the grooves of all wedges.

[0022] In the rest position (all drawers closed, Figures 1 to 3), the slides 50 of all drawers are situated in their centered positions with respect to the corrugated elastic portion of the corresponding wedge; they house one of the pins 3 of the blockage rod 1, and they face the proximal end of the profiled groove of the corresponding wedge. Therefore, any drawer can be opened, and then the corresponding pin 3 of the blockage rod 1 leaves the corresponding slide 50, enters the profiled groove of the wedge of the drawer which is in the course of opening, and then runs along this profiled groove. Because the groove is profiled, pin 3 should follow its path, modifies correspondingly its own level, causes the blockage rod 1 to move upwards or downwards, and finally leaves the distal end of the profiled groove. The pin is then situated at the level of said distal end which, as stated, is always situated at a level different from the level at which are situated the proximal ends of the grooves of all the wedges.

[0023] Therefore, when a drawer is opened, the blockage rod 1 is displaced upwards or downwards along with the slides 50 of all the drawers with the exception of the slide 50 of the drawer that has been opened. Said position of the blockage rod is determined by the level at which is situated the distal end of the profiled groove of the opened drawer. By way of example, according to Figure 4 the first drawer 11 has been opened and, because the distal end 31 of the profiled groove of wedge 21 is situated in the upper position, the blockage rod 1 and the slides

50 of the drawers 12, 13 and 14 are displaced upwards. On the contrary, according to Figure 5 the second drawer 12 has been opened and, because the distal end 32 of the profiled groove of wedge 22 is situated in the lower position, the blockage rod 1 and the slides 50 of the drawers 11, 13 and 14 are displaced downwards. Either the blockage rod 1 is displaced upwards or downwards, its pins 3 do not face the proximal ends of the profiled grooves of the drawers that have not been opened, and therefore these pins prevent the opening of the corresponding drawers.

[0024] When an attempt is made to open two drawers by a simultaneous maneuver, this maneuver is allowed at the commencement when the pins 3 corresponding to the maneuvered drawers enter the proximal end portions of the corresponding profiled grooves, but as soon as the pins arrive at a point in which the profiled grooves of the two maneuvered drawers are directed in different directions, both maneuvered drawers are blocked. All the more reason, this fact takes place if the maneuvered drawers are more than two. Therefore, the described arrangement not only prevents the opening of further drawers after opening of a first drawer, but also prevents opening of two or more drawers by a simultaneous maneuver, thus making up for the stated drawback of the security wedge devices against toppling, featured according to the known technique.

[0025] The fact that each portion of a profiled groove can be horizontal or inclined in different manner, the fact that the extension of each portion of the profiled groove may vary, whereby the point in which a portion of a profiled groove is connected to the subsequent one can be situated in different positions along the groove, and also the fact that, if needed, the profiled groove could have more than two portions oriented in different manner, allow easily providing a number of wedges having different grooves that corresponds to the number of drawers present in a cabinet.

[0026] On the other hand it is clear that the application of the invention does not involve any increase in the cost of a security device having wedges against the toppling, whereby the objects proposed for the invention are completely attained.

[0027] In the shown examples, the different portions of the profiled grooves are rectilinear, and this is preferable in order to render easier the manufacture of the wedges, however there is no need that said portions are rectilinear; one may foresee grooves profiled according to curved lines and also, in case, according to a single sinuous curve, provided that is respected the principle of the invention, according to which each profiled groove of the wedge of a drawer should extend according to a path different from the paths of the profiled grooves of all other wedges.

[0028] The device according to the invention can be installed on only one side of a drawer cabinet, or else two devices can be provided for installation on both sides of the drawer cabinet.

[0029] it is to be understood that this invention is not limited to the embodiment which has been described and shown as an example. Several possible modifications have been stated in the description, and others are available to those skilled in the art. These modifications and others, as well as any replacement by technically equivalent means, may be applied to what has been described and shown, without departing from the spirit of this invention and the scope of the appended Claims.

Claims

1. A security device for a piece of furniture with drawers, which comprises for each drawer (11,12,13,14) a member, a so-called wedge (21,22,23, 24), applied sidewise to the drawer and having a profiled groove extending from a proximal end portion (31°,32°,33°, 34°) to a distal end portion (31''', 32''', 33''', 34''') which is situated at a level different from the level of the proximal end portion (31°,32°,33°,34°), and comprises a blockage rod (1) mounted in the piece structure, slidable along the vertical direction and provided with a number of protruding pins (3), each pin (3) being suitable for engaging the profiled groove of the wedge of a drawer, all these pins (3) facing the proximal end portion (31°,32°,33°,34°) of the profiled groove of the corresponding wedge (21,22,23,24) when all drawers (11,12,13,14) are closed, **characterized in that** each profiled groove of the wedge (21,22,23,24) of a drawer (11,12,13,14) has a path different from the paths of the profiled grooves of all other wedges, whereby an attempt of simultaneously opening more than one drawer involves that the blockage rod (1) is biased to effect displacements that are not mutually compatible.
2. A security device, according to Claim 1, **characterized in that** the proximal end portion (31°,32°,33°, 34°) of the profiled groove of each wedge (21,22,23,24) has a preestablished position that is identical for all drawers (11,12,13,14).
3. A security device, according to Claim 1, **characterized in that** the profiled groove of each drawer (11,12,13,14) is formed by several subsequent stretches, each stretch can be parallel to the displacement direction of the drawer or inclined upwards or inclined downwards, and the various stretches forming the groove may have different extensions.
4. A security device, according to Claim 1, **characterized in that** each wedge (21,22,23,24) comprises a slide (50) vertically displaceable that engages the corresponding pin (3) of the blockage rod (1) when the drawer (11, 12, 13, 14) is situated in its closure position, and the displacement of this slide (50)

among its different positions is braked.

5. A security device, according to Claim 4, **characterized in that** each wedge (21,22,23,24) has an elastic portion (41,42,43,44) which cooperates with the corresponding slide (50) and is so shaped as to determine several stop positions of the slide (50).
6. A security device, according to Claim 1, **characterized in that** the device of the invention is installed on a single side of the cabinet with drawers.
7. A security device, according to Claim 1, **characterized in that** the device of the invention is installed on both sides of the cabinet with drawers.

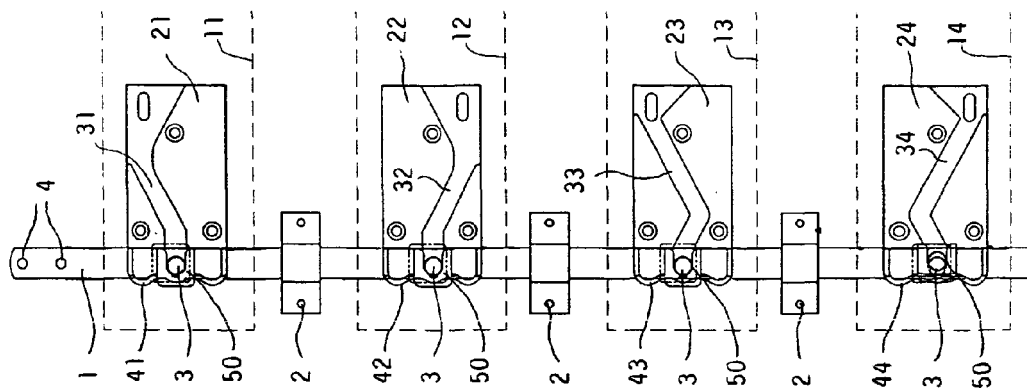


FIG. 1

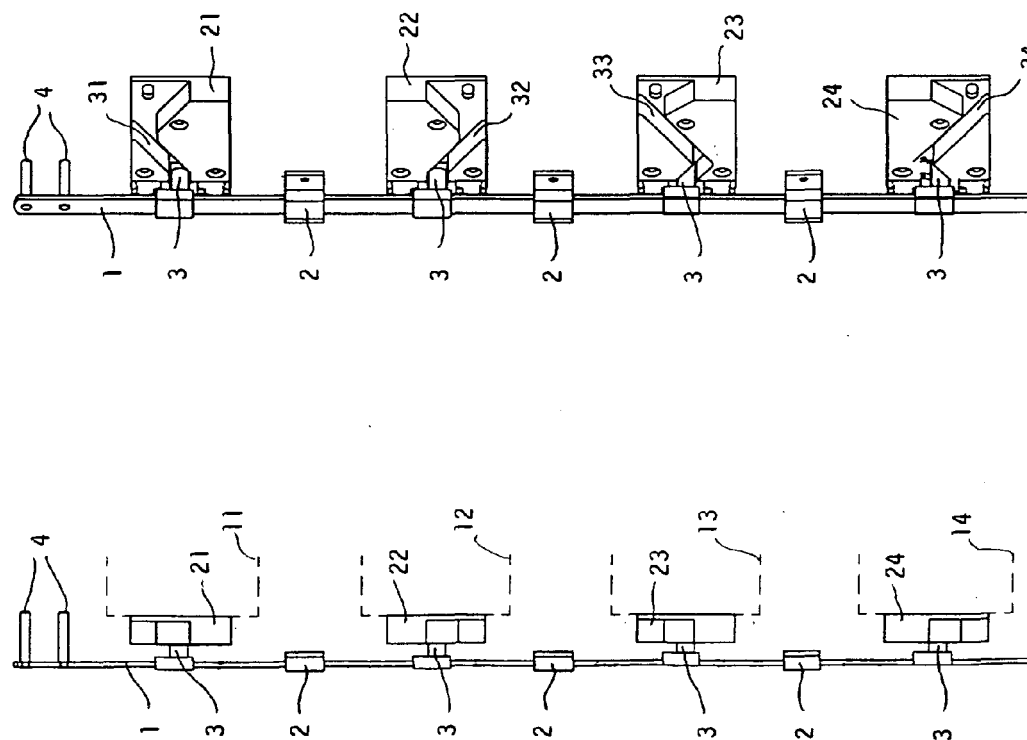


FIG. 2

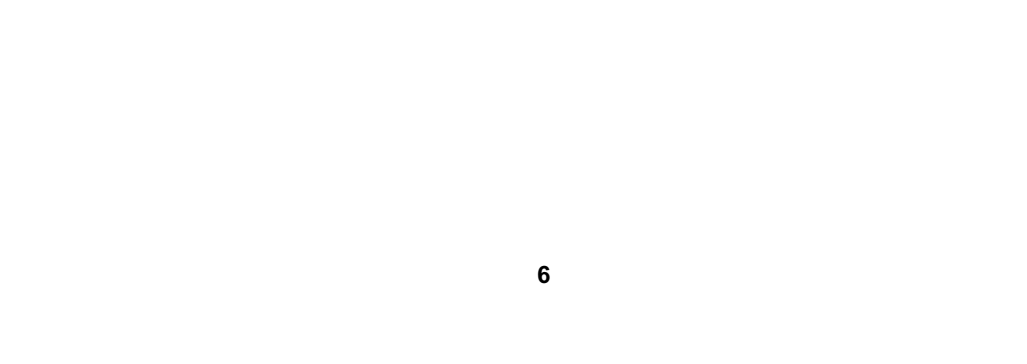


FIG. 3

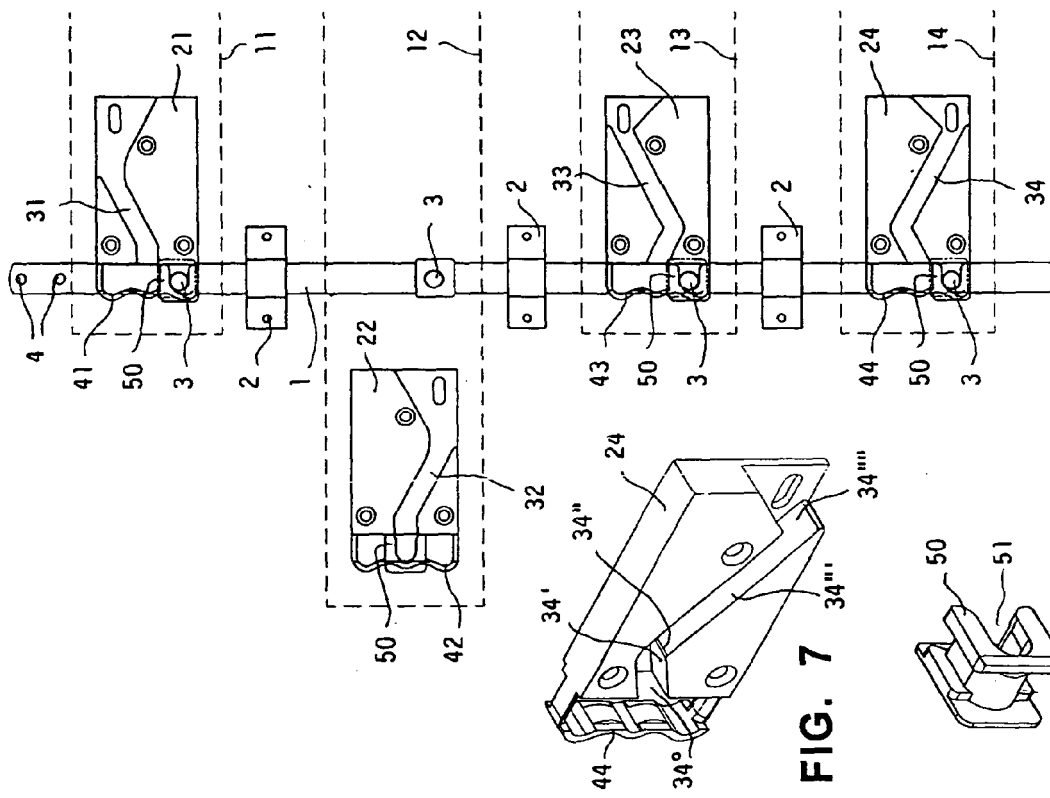


FIG. 5

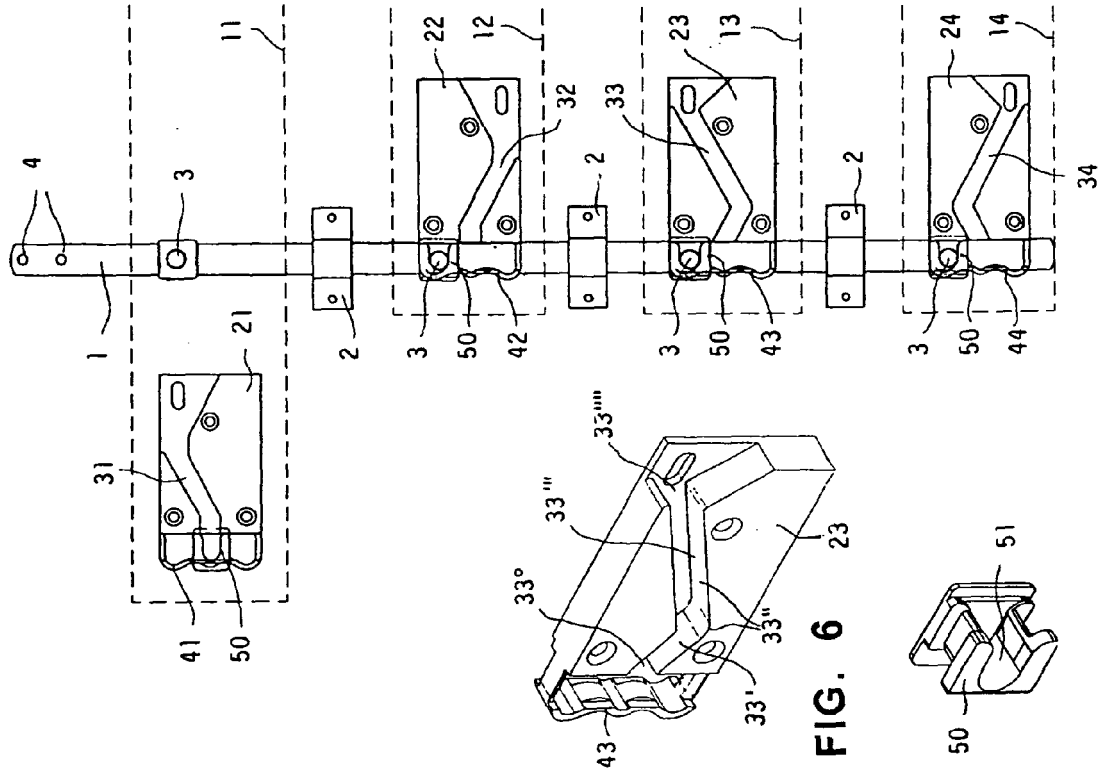


FIG. 6

FIG. 8

FIG. 8



EUROPEAN SEARCH REPORT

Application Number
EP 08 07 5797

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 91 13 864 U1 (HAEFELE KG, 7270 NAGOLD, DE) 2 January 1992 (1992-01-02) * the whole document *	1,2,6,7	INV. E05B65/46
A	US 4 925 257 A (FREDERIKSEN BJARNE [US] ET AL) 15 May 1990 (1990-05-15) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			E05B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 March 2009	Examiner Westin, Kenneth
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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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 07 5797

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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20-03-2009

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
DE 9113864	U1	02-01-1992	EP	0542020 A1	19-05-1993
			ES	2067994 T3	01-04-1995

US 4925257	A	15-05-1990	CA	1331036 C	26-07-1994
			DE	3940226 A1	28-06-1990
