



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 1 161 898 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
12.12.2001 Bulletin 2001/50

(51) Int Cl.7: **A47B 88/00**

(21) Application number: **01830364.4**

(22) Date of filing: **04.06.2001**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

(71) Applicant: **COMPAGNUCCI - S.P.A.**
I-60030 Santa Maria Nuova (AN) (IT)

(72) Inventor: **Compagnucci, Rossano**
Osimo (AN) (IT)

(30) Priority: **06.06.2000 IT MC000050**

(74) Representative: **Baldi, Claudio**
Piazza Ghislieri, 3
60035 Jesi (Ancona) (IT)

(54) **Fast joint used to fix the lateral sides of drawers to the front wooden panel**

(57) The present invention relates to a fast joint used to fix the front wooden panel of drawers to the two lateral sides that are made of extruded plastic or aluminium profiles.

Apart from ensuring fast coupling and uncoupling, the joint according to the present invention also allows for adjusting the front panel with respect to the lateral sides.

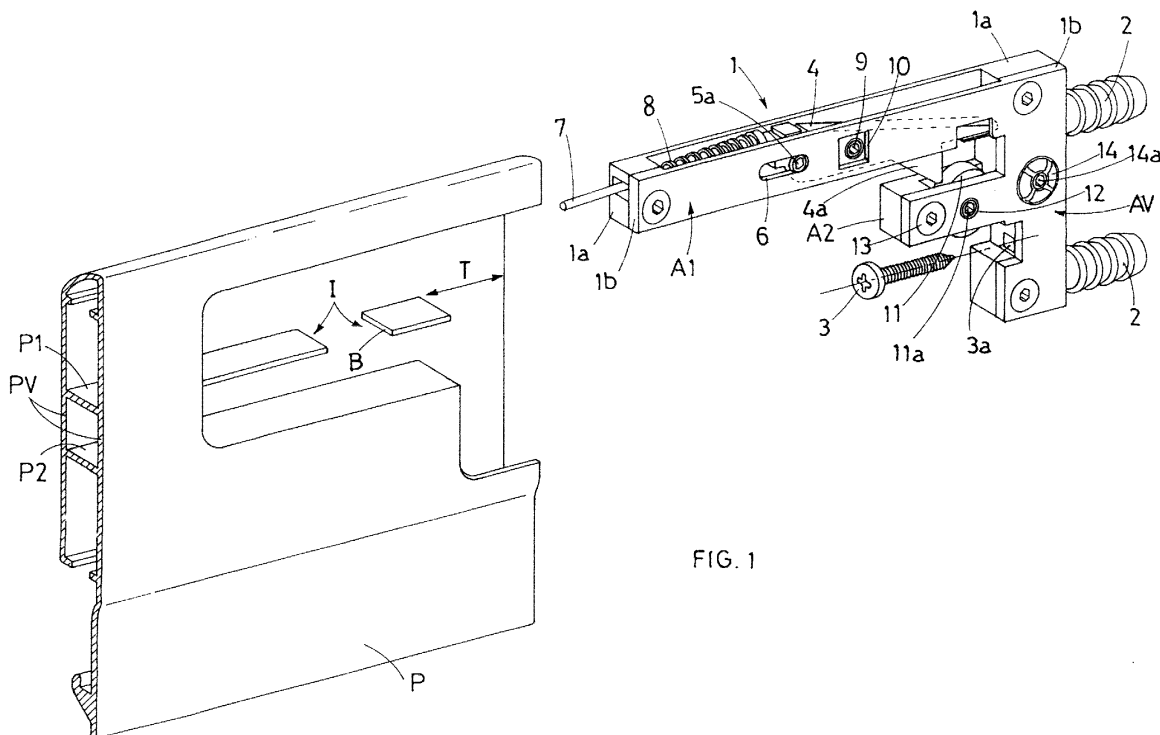


FIG. 1

EP 1 161 898 A1

Description

[0001] The present patent application relates to a fast joint used to fix the lateral sides of drawers to the front wooden panel.

[0002] The device according to the present invention has been devised in order to solve the problems related to the construction of models of drawers that feature a front wooden panel and two lateral sides made of extruded aluminium or plastic profiles, with tubular structure, which also house the rails for the slide guides of the drawer.

[0003] The connection between the guides and the panel is usually obtained by means of metal joints provided with a pair of pins with saw tooth profile, to be inserted into corresponding holes suitably located on the internal face of the wooden panel.

[0004] The joints also include means to hold them in place inside the lateral sides of the drawer.

[0005] In view of the above, the purpose of the present invention is to provide for a joint for fast coupling and uncoupling that allows for three adjustment levels of the drawer with respect to the cabinet. More precisely, with respect to the two lateral sides, the front panel of the drawer can be subjected to vertical adjustment (up-down), lateral adjustment (right-left) and an additional adjustment with reference to its vertical inclination (forward or backwards).

[0006] The joint according to the present invention has a basically box-type structure, being composed of a spaced pair of shaped metal plates, between which the adjustment and coupling means of the joint with respect to the extruded profile are housed.

[0007] Practically, the joint according to the present invention has the profile of a capital "F", since it is formed by a vertical wing, from which an upper wing and a central shorter wing protrude at right angles.

[0008] The vertical wing is placed against the internal face of the front panel of the drawer and fixed to it by means of a pair of horizontal pins, mounted on the rib of the vertical wing and inserted into a corresponding pair of holes suitably located on the internal wall of the wooden panel.

[0009] The vertical wing contains the pin used for lateral adjustment.

[0010] The upper horizontal wing contains the tooth for the fast coupling of the joint to the side, while the shorter horizontal wing contains the cam for vertical adjustment.

[0011] For major clarity the description of the joint according to the present invention continues with reference to the enclosed drawings, which are intended for purposes of illustration and not in a limiting sense, whereby:

- fig. 1 is an axonometric view of the joint according to the present invention in external position immediately before its housing located on the front end

of each lateral side (partially shown in the figure), to which the wooden front panel of the drawer must be fixed;

- figs. 2, 3 and 4 show the joint according to the present invention with a plane located inside a lateral side of the drawer sectioned with a vertical plane that coincides with the vertical separation plane of the parallel pair of metal plates; these three figures only differ in the position of the fast coupling tooth of the joint;
- figs. 5, 6 and 7 are the same as figs. 2, 3 and 4; these three figures only differ in the position of the cam for vertical adjustment;
- figs. 8, 9 and 10 show the section of the joint according to the present invention with a vertical plane passing through the longitudinal axis of the pin for lateral adjustment; these three figures only differ in the position of the pin for lateral adjustment;
- figs. 11 and 12 are the same as figs. 2, 3 and 4; these two figures only differ in the inclination of the front panel of the drawer;
- figs. 13A and 13B are an enlarged view of the lever provided with the coupling tooth for the joint.

[0012] With reference to figure 1, the joint (1) according to the present invention has a basically box-type structure, being composed of a spaced pair of shaped metal plates, with the first plate acting as body (1a) of the joint and the second plate acting as lid (1b), between which the adjustment and coupling means of the joint (1) with respect to the extruded profile (P) are housed.

[0013] The joint (1) has the profile of a capital "F", since it is formed by a vertical wing (AV), from which an upper wing (A1) and a central, shorter wing (A2) protrude at right angles.

[0014] On the rib of the vertical wing (AV) a pair of horizontal pins (2) with saw tooth profile is mounted, designed to be inserted into a corresponding pair of holes suitably located on the internal wall of the wooden panel (L).

[0015] A safety screw (3) to be inserted into a through hole (3a) with horizontal axis located on the vertical wing (AV) is provided to hold the joint (1) in place with respect to the wooden panel (L).

[0016] The upper horizontal wing (A1) contains the tooth for the fast coupling of the joint (1) to the metal side (P).

[0017] More precisely, the coupling tooth (4a) is an integral part of an lever (4) pivoted to the wing (A1) by means of an eccentric (5); more precisely, the rear end of the lever (4) has a hole in which a disk (5) is exactly housed and turns, fixed to an eccentric pin (5a), whose opposite ends are inserted into an opposite pair of slots (6) located on the wing (A1).

[0018] The two ends of the pin (5a) have an hexagonal seat, in which an Allen wrench can be fitted to drag into rotation the disk (5), thus moving the lever (4) forward or backwards inside the wing (A1).

[0019] It must be noted that a stem (7) is fixed to the rear end of the lever (4), acting as support and guide for a pre-compressed spring (8) that discharges its thrust on the lever (4), which is therefore constantly subjected to a force that pushes it forward towards the vertical wing (AV).

[0020] Since this force passes above the pivoting pin (5a) of the lever (4) (as shown in figs. 13a and 13b), and not through the centre of the pivoting pin (5a) of the lever (4), the lever (4) is also subjected to an overturning moment that tends to rotate it downwards.

[0021] With particular reference to figures 2, 3 and 4, it must be noted that before inserting the joint (1) inside its housing located on the side (P), the eccentric pin (5a) must be rotated by 180° in order to bring the lever (4) in the extreme backing position, thus charging the spring (8) (as shown in fig. 2).

[0022] Attention is drawn on the fact that the profile (P) contains some stiffening longitudinal partitions (P1 and P2) that must be partially cut.

[0023] More exactly, both partitions (P1 and P2) must be cut on the opening of the profile (P) for a section (T) with length equal to the width of the vertical wing (AV) of the joint, in order to fit it into the opening of the profile (P).

[0024] The upper partition (P1) must be provided with a notch (I) in order to house the coupling tooth (4a).

[0025] In view of the above, when the joint is inserted into the profile (P), the tooth (4a) of the lever (4) interferes with the upper partition (P1), being overturned upwards, until the tooth (4a) reaches above the notch (I), where it tends to snap under the thrust of the spring (8).

[0026] As shown in fig. 2, when the tooth snaps into the notch (I), the tooth does not interfere with the front border (B) of the notch (I).

[0027] Once the tooth (4a) has snapped inside the notch (I), the pin (5a) must be rotated again by 180° in order to move the lever (4) forward inside the wing (A1) until the tooth (4a) touches the front border (B) of the notch (as shown in fig. 3).

[0028] Once in this position, the joint (1) is coupled and stopped inside the profile (P).

[0029] With reference to fig. 3, it must be noted that the interference between the notch (4a) and border (B) occurs before the lever (4) reaches the end of its forward stroke, and that the pin (5a) is located in the centre of its housing and guide slot (6).

[0030] To uncouple the joint (1) from the profile (P) it is only necessary to overturn the lever (4) upwards until the tooth (4a) exits the notch (I), causing the forward movement of the lever (4) that can reach its extreme forward position under the thrust of the spring (8), as shown in fig. (4).

[0031] In order to overturn the lever (4) upwards, the lever (4) has a hexagonal hole (9) in which an Allen wrench can be fitted through a suitable slot (10) located on the wing (A1).

[0032] Figures 13A and 13B show that the disk (5) is

housed in a hole (4b) of the lever (4) that has a notch (4c) and an internal tooth (4d), capable of engaging into one of the two cuts (5b) located on the perimeter of the disk (5); when the disk (5) is dragged into rotation, the tooth (4d) can exit its housing (5b) thanks to the elastic opening of the hole (4b).

[0033] As it can be seen, the two cuts (5b) are located in diametrically opposite position, in order to act as reference point and end of the stroke for each 180° rotation of the disk (5).

[0034] With particular reference to figures 5, 6 and 7 it must be noted that the shorter, horizontal wing (A2) contains the cam for the vertical adjustment of the wooden panel (L) with respect to the lateral sides (P).

[0035] In particular, the cam consists in a disk (11), whose diameter is exactly equivalent to the distance between the two partitions (P1 and P2).

[0036] The disk (11) is fixed on an eccentric pin (11a) exactly housed in an opposite pair of holes (12) located on the wing (A2); the two ends of the pin (11a) have an hexagonal seat, in which an Allen wrench can be fitted and used to drag into rotation the disk (11), thus rising or lowering the joint (1)-and the panel (L) joined to it by means of the pins (2) - with respect to the lateral side (P).

[0037] Number (13) indicates a screw used to tighten the lid (1b) to the body (1a) on the horizontal wing (A2); the screw (13) must be loosened before turning the disk (11) and tightened immediately after the vertical adjustment, so that the disk (11) is permanently tightened in the adjustment position between body (1a) and lid (1b).

[0038] With particular reference to figures 8, 9 and 10, it must be noted that the vertical wing (AV) contains the pin for the lateral adjustment of the wooden panel (L) with respect to the lateral sides (P).

[0039] In particular, the pin consists in a dowel (14) with horizontal axis tightened inside a threaded hole that goes through the vertical wing (AV); the length of the dowel (14) is higher than the width of the wing (AV) and exactly equal to the width between the opposite pair of vertical walls (PV) of the lateral side (P) in which the joint (1) is fitted.

[0040] The two ends of the dowel (14) have a hexagonal seat (14a) into which an Allen wrench can be fitted and used to drag into rotation the dowel (14), thus translating the joint (1) rightwards or leftwards with respect to the dowel (14), perfectly positioned between the opposite pair of vertical walls (PV).

[0041] Finally, it must be noted that the wall of the profile (P) has a series of slots into which an Allen wrench can be fitted to access the hexagonal seats located on the pin (5a), the hole (9), the pin (11a), the dowel (14) and the screw (13).

[0042] Figures 11 and 12 show the spring (8) for the automatic adjustment of the wooden panel (L) with reference to the forward or backward inclination, when it reaches the end of the closing stroke; attention must be drawn on the fact that the guides that are usually mounted on this type of drawers are normally provided with a

spring device that, at the end of the closing stroke, automatically actuates to recall them towards the inside of the cabinet.

[0043] Finally, it must be said that the spring (8) also acts as flexible shock absorber when opening the drawer, when a high extraction force is suddenly applied on the wooden panel (L) or vice versa when closing the drawer, when the drawer is vehemently pushed against the cabinet.

Claims

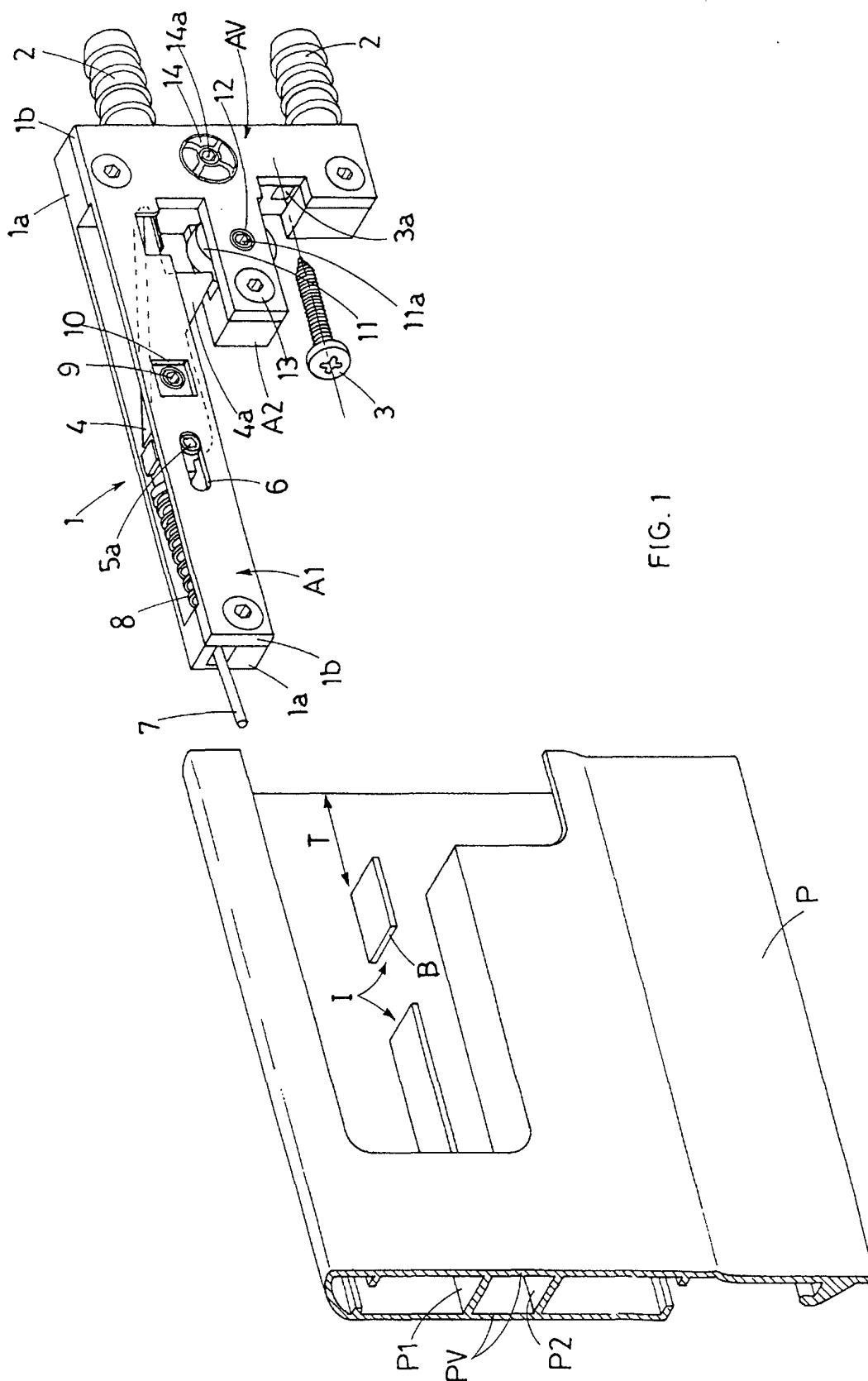
1. Fast joint used to fix the lateral sides of drawers to the front wooden panel, of the type comprising a device for coupling to the side (P) and one or more horizontal pins (2) with saw tooth profile, designed to be inserted into a pair of corresponding holes suitably located on the internal wall of the front wooden panel (L) of the drawer, **characterised by** the fact that it comprises:

- a basically box-type structure, composed of a spaced pair of shaped metal plates, with the first plate acting as body (1a) of the joint and the second plate acting as lid (1b), between which the adjustment and coupling means of the joint (1) with respect to the side (P) are housed; it being provided that the joint (1) has the profile of a capital "F", since it is formed by a vertical wing (AV), from which an upper wing (A1) and a central, shorter wing (A2) protrude at right angles;
- a coupling tooth (4a) located inside the wing (A1) and being an integral part of a lever (4) pivoted to the wing (A1) by means of a disk (5) exactly housed inside a hole (4b) and provided with an eccentric pin (5a) whose opposite ends are inserted into an opposite pair of slots (6) located on the wing (A1), it being provided that the two ends of the pin (5a) have an hexagonal seat and it also being provided that the hole (4b) of the lever (4) has a notch (4c) and an internal tooth (4d), capable of engaging into one of the two cuts (5b) located in diametrically opposition position on the perimeter of the disk (5);
- a stem (7) fixed to the rear end of the lever (4) acting as support and guide for a pre-compressed spring (8) that discharges its thrust on the lever (4) according to a direction that passes above the pivoting pin (5) of the lever (4) and not through the centre of the pivoting pin (5a) of the lever (4).

2. Joint according to the previous claim, **characterised by** the fact that it comprises a disk (11) located inside the shorter horizontal wing (A2), whose di-

ameter is exactly equivalent to the distance the two partitions (P1 and P2) located inside the side (P), which is fixed on an eccentric pin (11a) exactly housed in an opposite pair of holes (12) located on the wing (A2); it being provided that the two ends of the pin (11a) have an hexagonal seat and it being also provided that a screw (13) is located on the horizontal wing (A2) used to tighten the disk (11) between body (1a) and lid (1b).

3. Joint according to claim 1) **characterised by** the fact that the vertical wing (AV) contains a dowel (14) with horizontal axis, which is tightened inside a threaded hole that goes through the vertical wing (AV), with length higher than the width of the wing (AV) and exactly equal to the width between the opposite pair of vertical walls (PV) of the side (P) in which the joint (1) is fitted; it being provided that the two ends of the dowel (14) have a hexagonal seat (14a).



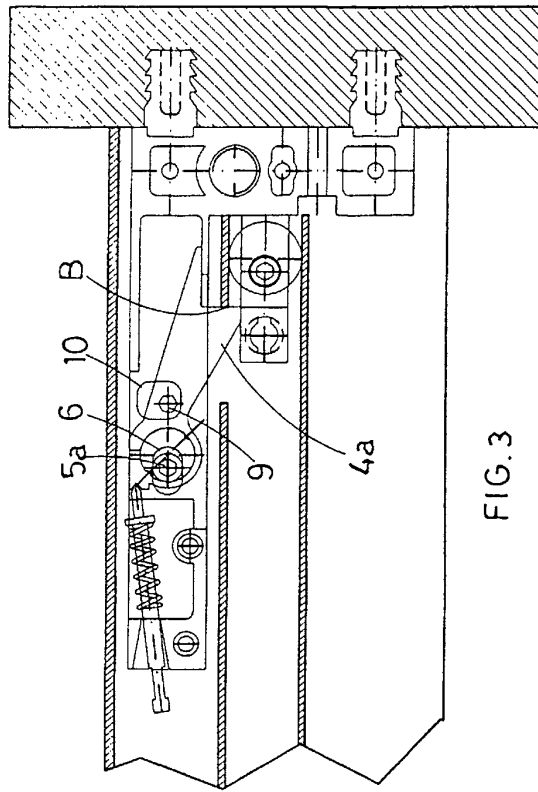


FIG. 3

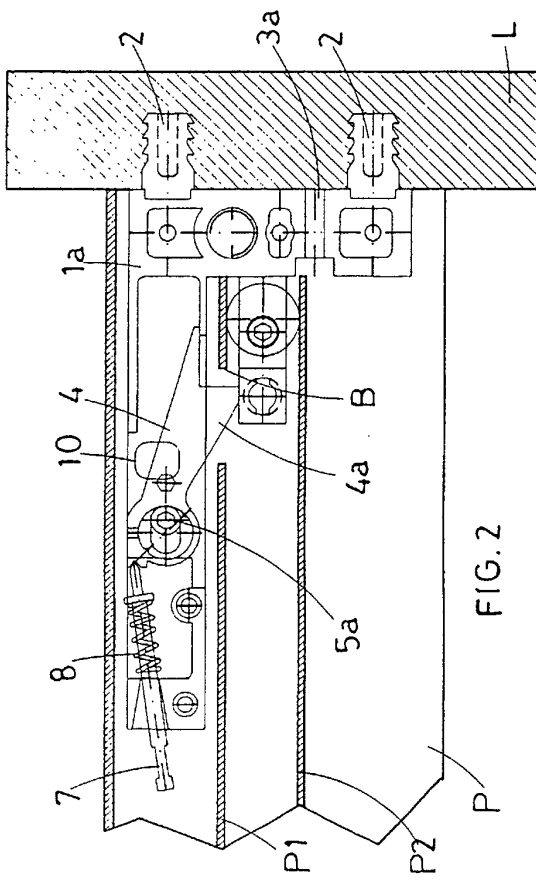


FIG. 2

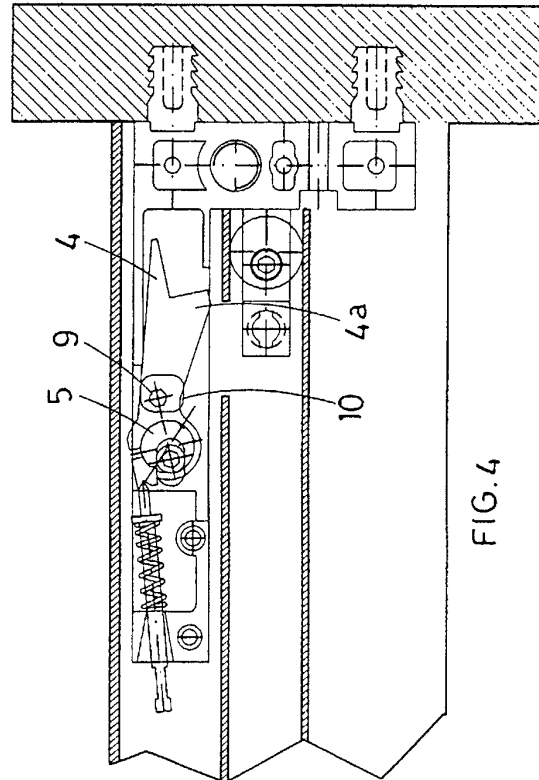
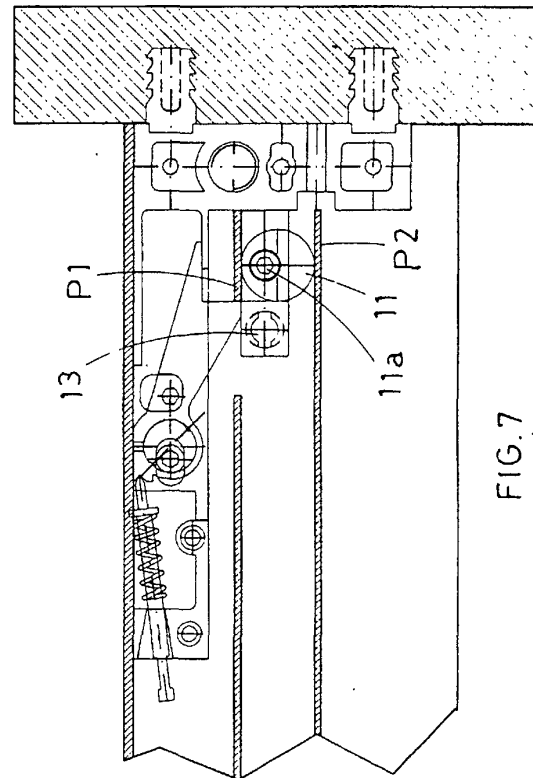
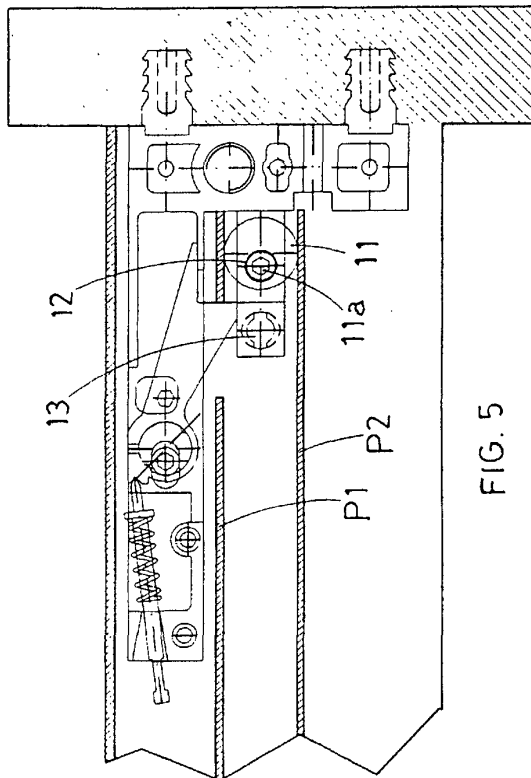
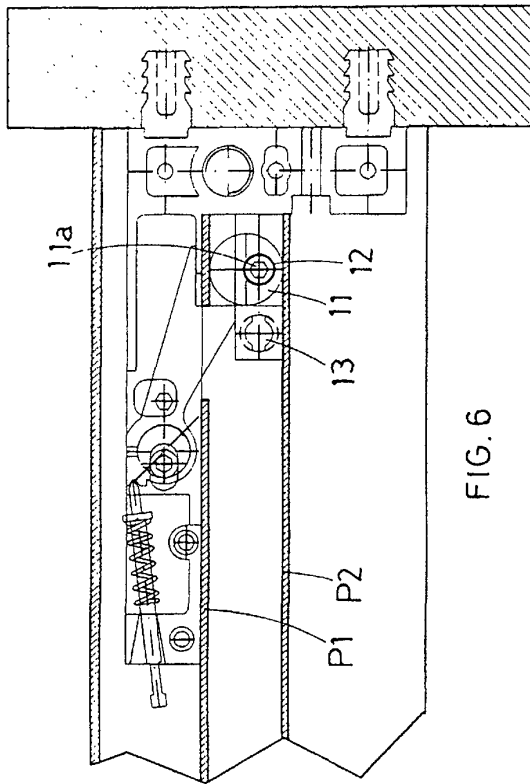


FIG. 4



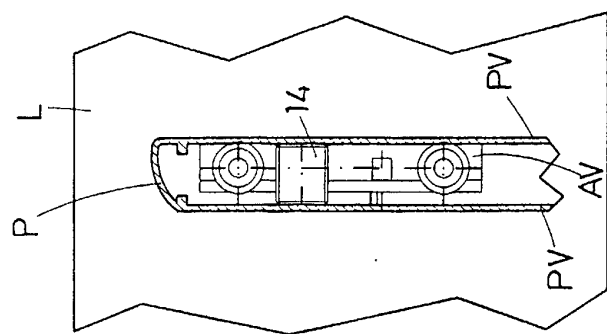


FIG. 10

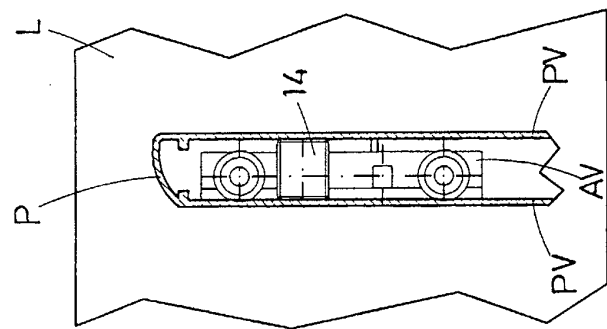


FIG. 9

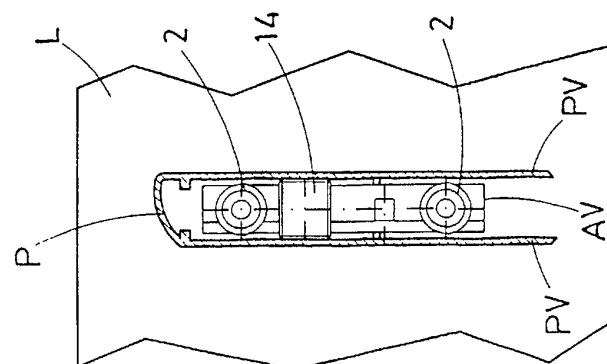


FIG. 8

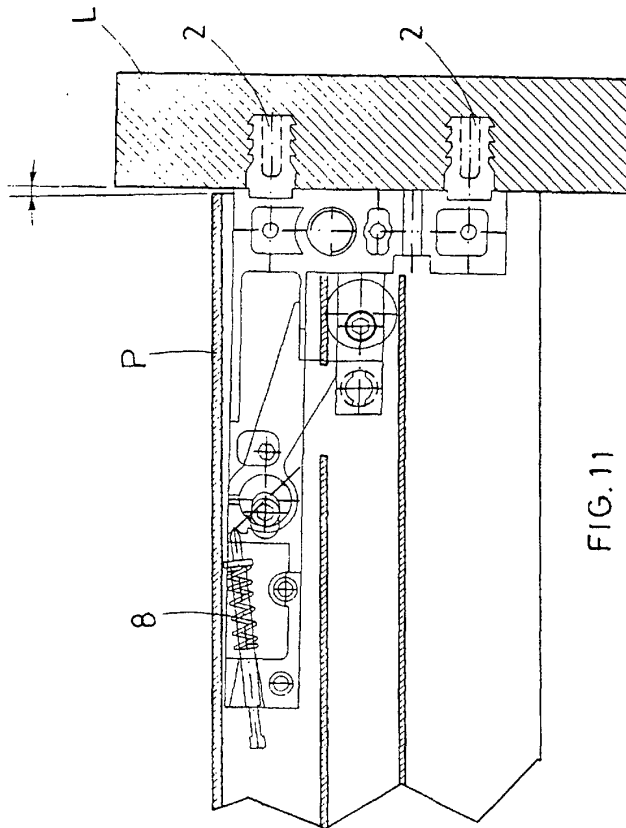


FIG. 11

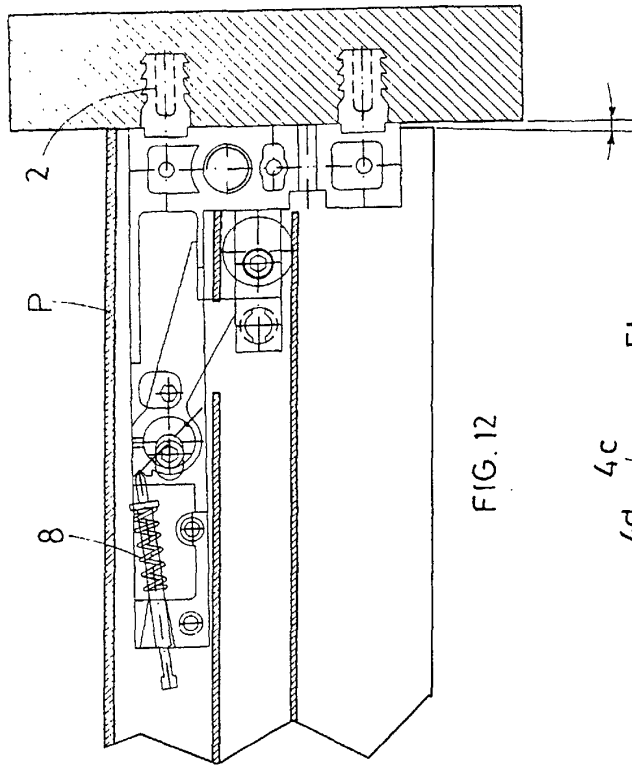


FIG. 12

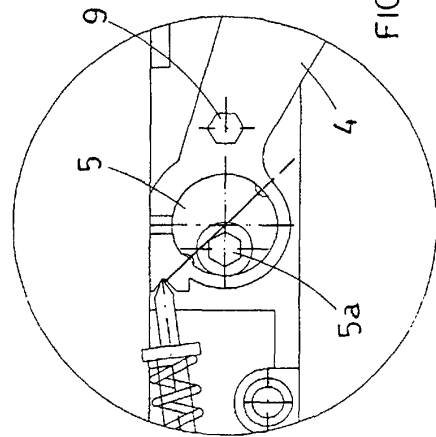


FIG. 13A

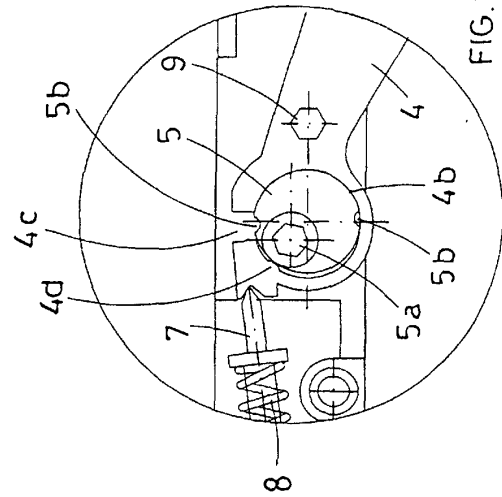


FIG. 13B



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0364

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	EP 0 740 917 A (BLUM GMBH JULIUS) 6 November 1996 (1996-11-06) * column 3, line 23 - column 5, line 37 * * figures 1-14 * * column 6, line 44 - column 8, line 5 * * figures 23-30 * ---	1-3	A47B88/00
A	US 4 609 236 A (TWEELMANN GUENTER) 2 September 1986 (1986-09-02) * column 2, line 59 - column 4, line 59 * * figures *	1-3	
A	DE 94 19 610 U (BLUM GMBH JULIUS) 16 February 1995 (1995-02-16) * page 3, paragraph 3 - page 6, last line * * figures *	1-3	
A	US 5 860 718 A (BRUESTLE KLAUS) 19 January 1999 (1999-01-19) * column 2, line 53 - column 4, line 44 * * figures * -----	1-3	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A47B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		4 September 2001	van Hoogstraten, S
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04.C01)

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

EP 01 83 0364

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

04-09-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0740917 A	06-11-1996	AT 402778 B	25-08-1997
		AT 190093 A	15-01-1997
		AT 158482 T	15-10-1997
		AT 173590 T	15-12-1998
		DE 9421872 U	19-12-1996
		DE 59404139 D	30-10-1997
		DE 59407355 D	07-01-1999
		EP 0636327 A	01-02-1995
		JP 10304943 A	17-11-1998
		JP 2822307 B	11-11-1998
		JP 7067736 A	14-03-1995
		US 5540515 A	30-07-1996
US 4609236 A	02-09-1986	DE 8316770 U	10-11-1983
		AT 22394 T	15-10-1986
		CA 1204809 A	20-05-1986
		DE 3366432 D	30-10-1986
		EP 0096898 A	28-12-1983
DE 9419610 U	16-02-1995	AT 402997 B	27-10-1997
		AT 7694 A	15-03-1997
		IT BZ950001 U	17-07-1995
US 5860718 A	19-01-1999	AT 404664 B	25-01-1999
		AT 48795 A	15-06-1998
		WO 9628995 A	26-09-1996
		CA 2215774 A	26-09-1996
		EP 0814686 A	07-01-1998
		JP 3066655 B	17-07-2000
		JP 10511296 T	04-11-1998