

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 0 777 030 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
04.06.1997 Bulletin 1997/23

(51) Int. Cl.⁶: **E06B 3/88**, E05B 65/08

(21) Application number: **96203364.3**

(22) Date of filing: **28.11.1996**

(84) Designated Contracting States:
BE DE ES FR IT LU NL PT

(72) Inventor: **van Vulpen, Gijsbertus Jan**
1214 ED Hilversum (NL)

(30) Priority: **30.11.1995 NL 1001795**

(74) Representative: **Land, Addick Adrianus Gosling**
Arnold & Siedsma,
Advocaten en Octrooigemachtigden,
Sweelinckplein 1
2517 GK Den Haag (NL)

(71) Applicant: **Polynorm N.V.**
3751 LJ Bunschoten (NL)

(54) **Sliding door and handling jamb therefor**

(57) Sliding door provided with a door panel with means arranged along at least one horizontal edge thereof for guiding a sliding movement of the door, a jamb manufactured from a comparatively stiff material, connected to a vertical edge of the door panel and

extending substantially over the whole height thereof, the dimensions of which jamb in transverse direction of the door correspond substantially with the thickness thereof.

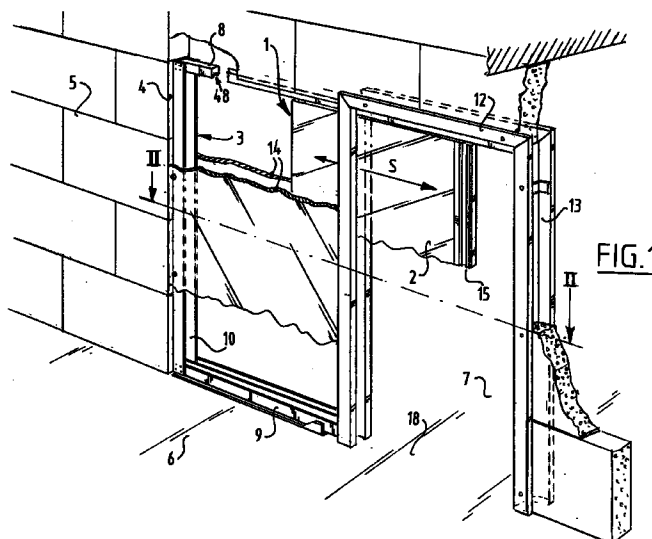


FIG.1

EP 0 777 030 A1

Description

Sliding doors are generally known and are being used to an increasing extent in the house and public utility building sector. Sliding doors have a number of advantages compared to conventional swing doors. They take up little space for instance since a swing circle does not have to be left clear for the door, while they are moreover relatively safe due to the absence of a swinging movement. In addition, sliding doors are simpler to operate, in particular for the disabled, while the load on a wall construction resulting from a closing movement of a sliding door is directed along the wall and is therefore more advantageous than that of a swing door. Finally, a sliding door offers a greater freedom of form, which is of particular importance from an architectural viewpoint.

The present invention relates to a sliding door provided with a door panel with means arranged along at least one horizontal edge thereof for guiding a sliding movement of the door, a jamb manufactured from a comparatively stiff material, connected to a vertical edge of the door panel and extending substantially over the whole height thereof, the dimensions of which jamb in transverse direction of the door correspond substantially with the thickness thereof.

Such a sliding door (or sliding window) can perhaps be derived from the British patent GB-A-2 187 784. The form of the extrusion profile shown in this patent specification is however such that, particularly in the case no closing or locking means are arranged therein, a sliding door in a position pushed fully into the wall cannot be properly gripped.

The present invention has for its object to obviate this drawback of the existing sliding door and/or to provide a sliding door including the jamb which can be pushed away (almost) completely into the door frame whereby the passage space in the door opening can be utilized optimally.

This object is achieved in that the jamb is provided at least along a considerable part of the length thereof with at least one groove or recess functioning as handgrip.

Even in the case that a recess for locking means is not arranged in the jamb, this latter can easily be grasped by the user as a result of the groove or recess. In addition, the time and cost involved in manufacturing the door panels can be reduced. Furthermore, the construction of the door panels according to the invention does not depend on the closing direction of the sliding door. In order to enable easy operation by users of different height the recess preferably extends substantially over the whole height of the door.

It is further possible according to the present invention to make use of thin door panels such that the whole construction of the sliding door and the associated door frame can take a relatively thin form, whereby sliding doors can also be accommodated in relatively thin walls, for instance 7 cm thick, such as are applied as

inside wall in the house building sector.

In order to prevent unintended sliding open of the door, the latter preferably has locking means connected to the handling jamb. The locking means can herein comprise at least one locking element which is arranged on an outer end of the handling jamb and which is movable between a release position retracted into the handling jamb and a locking position protruding outside the handling jamb. By arranging the locking element or the locking elements on the outer end of the handling jamb instead of in the edge thereof directed toward an end door frame, the passageway of the door opening remains as free as possible of protruding obstacles. In addition, the locking means in this embodiment can also be used effectively in a double sliding door having two door panels slidable toward one another, while arranging of visible openings in the door frame parts can further be avoided in this manner.

The locking element is preferably received slidably in the handling jamb. A part of the length of the handling jamb can hereby be used to guide the locking element, while moreover no additional operations on the door panel are thus required.

When the locking element functions as latch bolt, the sliding door preferably has means co-acting with the locking element for biasing thereof to its locking position. The door hereby falls automatically into the lock when it is closed. When conversely the locking element is used as bathroom or toilet lock, the sliding door has means co-acting with the locking element for fixing thereof in the locking position or the releasing position.

In order to enable unlocking of the sliding door this latter is preferably provided with operating means which co-act with the locking element and which are arranged movably in the handling jamb. The operating means preferably comprise at least one operating member received in the handling jamb and preferably in the recess therein. The total thickness of the sliding door hereby remains limited. When the operating member is moreover slidable it can be operated simply, also when it protrudes from the handling jamb only very slightly. The total thickness of the door is thus limited still further.

A handling jamb which is simple to manufacture has a substantially omega-shaped cross section. Such a handling jamb can be extruded in simple manner and subsequently shortened to the desired length.

The invention is now elucidated on the basis of two embodiments, wherein reference is made to the annexed drawing, in which:

fig. 1 is a partly cut away perspective view of a sliding door according to the present invention in the fitted situation;

fig. 2 shows a cross section along the line II-II in fig. 1;

fig. 3 is a partly cut away detail view of a lock construction of the sliding door according to the invention used as bathroom/toilet lock;

fig. 4 is a perspective detail view with exploded

parts of the lock construction and a handling jamb as shown in fig. 3; and

fig. 5 is a view corresponding with fig. 4 of an alternative lock construction which is used as latch bolt.

A sliding door 1 (fig. 1) is provided with a door panel 2 which is arranged slidably in a door frame 3. The door frame 3 is in turn accommodated in a recess 4 in a wall 5 between two spaces 6, 7. Door frame 3 comprises an upper profile 8, a lower profile 9, an end profile 10 and door profile parts 11, 12, 13 which define a door opening 18. A guide rail 48 is received in the upper profile 8. A space 16 between door profile parts 11 and the end edge 10, in which sliding door 1 is accommodated in its open situation, is hidden from view by cover panels 14. The sliding door 1 is suspended movably along guide rail 48 by means of a plurality of carriages 21 which can travel in guide rail 48 and which are fixed to the top of door panel 2 (fig. 3). Door panel 2 is further provided on its side remote from door opening 18 with brushes 19 (fig. 2) which ensure an even and damped sliding movement of door 1.

The sliding door is provided on the side of door panel 2 facing toward the door opening 18 with a handling jamb 15 which is manufactured from a relatively stiff material. The comparatively thin door panel is hereby strengthened and warping thereof is prevented. Handling jamb 15 has in transverse direction of the door panel 2 roughly the same dimensions as the thickness of the door panel itself. This ensures that the entire door 1, including handling jamb 15, can be pushed away into the space 16. The full width of door opening 18 is thus available as passageway, whereby it is possible to suffice with a relatively small door opening. This in contrast to conventional sliding doors wherein protruding door handles and the like make it impossible to push the door fully out of the door opening, whereby an outside-dimension door opening must be applied in order to create a sufficient passageway. The handling jamb 15 is provided with a recess 17 which extends over the whole length thereof. This recess 17 functions as hand-grip, whereby arranging of separate recesses in door panel 2 becomes unnecessary. Handling jamb 15 is embodied as an extruded profile part with a substantially omega-shaped cross section.

Locking means 20 are arranged in handling jamb 15 (fig. 3). These locking means 20 comprise a locking element 22 which is received slidably in a chamber 26 on the upper part of handling jamb 15. Locking element 22 is slidable between the retracted position drawn in full lines in which the sliding door is released for movement and an extended position 22' designated with dashed lines in which the locking element falls into a recess 23 in guide rail 48 defined by a lip 24, whereby the sliding door is locked against movement. A spring 27 which co-acts with a groove 28 in locking element 22 functions in this embodiment of the locking means 20 as fixation means for fixing the locking element 22 in the locking position.

The locking means 20 are operated by operating means 29 arranged in handling jamb 15. These operating means comprise a control rod 30 which connects locking element 22 to an operating member 31 received slidably in the recess 17 of handling jamb 15. The operating member 31 herein takes the form of a relatively flat slide fitting into recess 17 and having a protruding part 32 which protrudes through an opening 33 in handling jamb 15. The protruding part 32 has a recess 34 in which the lower extremity 35 of control rod 30 is received. The protruding part 32 of operating slide 31 forms together with a lower edge 36 of the opening 33 in handling jamb 15 a lower boundary for the movement of locking element 22 when, after being pressed past the fixation spring 27, this element drops back under the influence of gravity to its release position. In the shown embodiment the locking means 20 are suitable as bathroom or toilet lock. For this purpose an indicator slide 37 is fixed onto the protruding part 32 of operating slide 31 by means of screws 38 (fig. 4). This slide 37 also has a protruding part with a recess 45 so that the extremity 35 of control rod 30 can be clamped between operating slide 31 and indicator slide 37. The latter indicates which position the locking means 20 occupy in a manner which is visible on the outside of sliding door 1. For this purpose a covering member 39 for fixing opposite the operating slide 31 in the other recess 17 of handling jamb 15 by means of a screw 40 is provided with a window 41 through which the indicator slide 37 can be viewed. This covering member 39 is otherwise provided on its top part with a groove 42 in which a lip 43 of indicator slide 37 is slidable and which is open from the top. The indicator slide 43 and therefore the operating member 31 connected thereto can thereby be operated from the outside of the sliding door, whereby in the case of an emergency the sliding door can be unlocked from the outside, as is required for bathroom and toilet locks.

When sliding door 1 is not applied as bathroom or toilet door, it has only to be provided with a latch bolt. Such a latch bolt must operate automatically. To this end in the alternative embodiment of locking means 20 a biasing spring 44 is arranged round the control rod 30 of locking element 22 (fig. 5). This biasing spring 44 is a pressure spring which supports against the bottom 49 of chamber 26. The operating means comprise in this embodiment two operating slides 31A, 31B which are received in the recesses 17 on either side of handling jamb 15 and are mutually connected by means of screws 38, and between which the extremity 35 of control rod 30 is clamped. By moving operating slides 31A and/or 31B downward counter to the force of biasing spring 44 the locking element 22 is moved from its locking position to its releasing position. The sliding door 1 can hereby be opened. After release of operating slides 31A and/or 31B the locking element 22 is pressed once again by biasing spring 44 out of chamber 26 in handling jamb 15 and thus locks the door when it encounters a locking opening 23 arranged in the upper rail 8. In order to cause the door to fall automatically into the

latch bolt when it is pushed shut, the locking recess 23 is bounded by a lip 24 with an inclining portion 46 (fig. 3), whereby when door 1 is pushed shut the locking element 22 is first pressed in counter to the force of spring 44 and, after passing over lip 24, is then pressed outward into locking opening 23.

The chosen construction of the locking means and operating means makes it possible to use a large number of standard components irrespective of the desired configuration of the lock. Both locks are thus built into an identical handling jamb 15 with the same recesses 33. The handling jamb 15 is moreover provided with an aperture 47 which is only required for the bathroom and toilet lock (fig. 4) in order to fit the covering member 39. The upper rail 8 is also always provided with an inclining portion 46 (fig. 3) which is only necessary for the latch bolt. The necessity of holding large stocks of different components is thus obviated, whereby stocking costs are reduced. Assembly of the sliding door in the house is moreover simplified in this way.

Claims

1. Sliding door provided with a door panel with means arranged along at least one horizontal edge thereof for guiding a sliding movement of the door, a jamb manufactured from a comparatively stiff material, connected to a vertical edge of the door panel and extending substantially over the whole height thereof, the dimensions of which jamb in transverse direction of the door correspond substantially with the thickness thereof, **characterized in that** the jamb is provided at least along a considerable part of the length thereof with at least one groove or recess functioning as hand-grip.
2. Sliding door as claimed in claim 1, **characterized in that** the recess or groove extends substantially over the whole length of the door.
3. Sliding door as claimed in claim 1 or 2, **characterized in that** the jamb has a substantially omega-shaped cross section.
4. Sliding door (1) as claimed in any of the foregoing claims, **characterized by** locking means (20) connected to the jamb (15).
5. Sliding door (1) as claimed in claim 4, **characterized in that** the locking means (20) comprise at least one locking element (22) which is arranged on an outer end of the handling jamb (15) and which is movable between a release position retracted into the handling jamb (15) and a locking position protruding outside the handling jamb (15).
6. Sliding door (1) as claimed in claim 5, **characterized in that** the locking element (22) is received slidably in the handling jamb (15).
7. Sliding door (1) as claimed in claim 5 or 6, **characterized by** means (44) co-acting with the locking element (22) for biasing thereof to its locking position.
8. Sliding door (1) as claimed in claim 7 or 8, **characterized by** means (27, 28) co-acting with the locking element (22) for fixing thereof in the locking position or the releasing position.
9. Sliding door (1) as claimed in any of the claims 5-8, **characterized by** operating means (29) which co-act with the locking element (22) and which are arranged movably in the handling jamb (15).
10. Sliding door (1) as claimed in claim 9, **characterized in that** the operating means (29) comprise at least one operating member (31) arranged in the handling jamb (15).
11. Sliding door (1) as claimed in claim 10, **characterized in that** the operating member (31) is arranged in the recess (17) of the handling jamb (15).
12. Sliding door (1) as claimed in claim 10 or 11, **characterized in that** the operating member (31) is slidable.

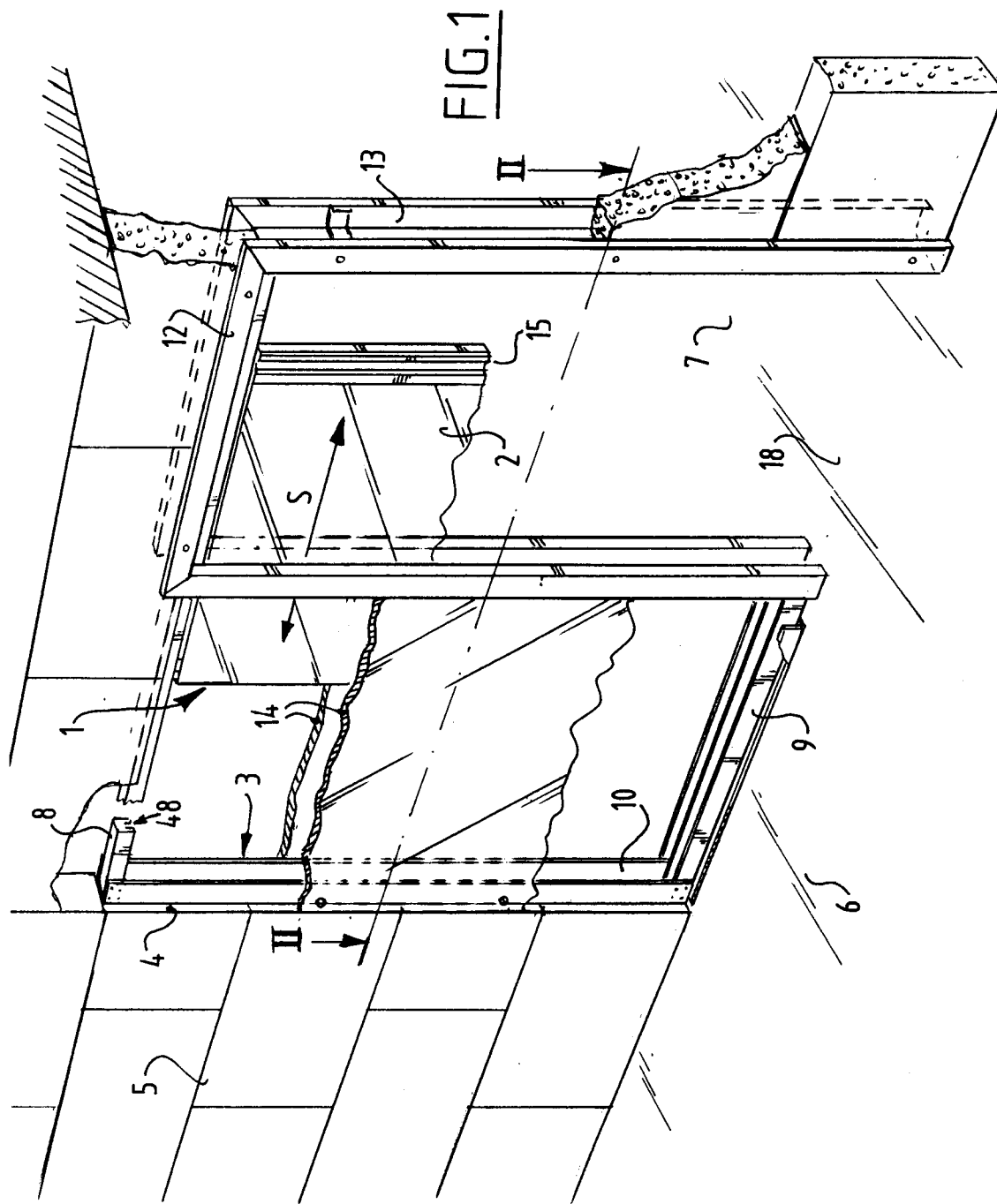
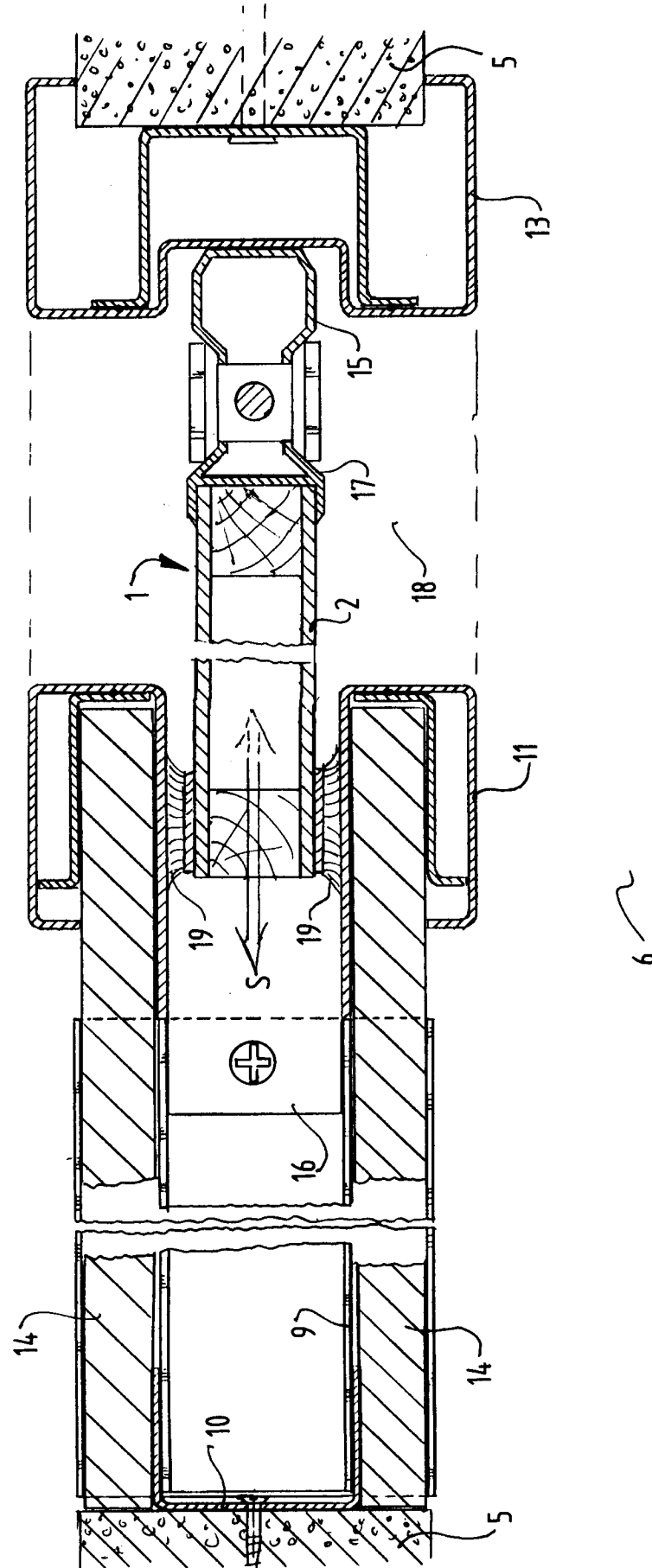
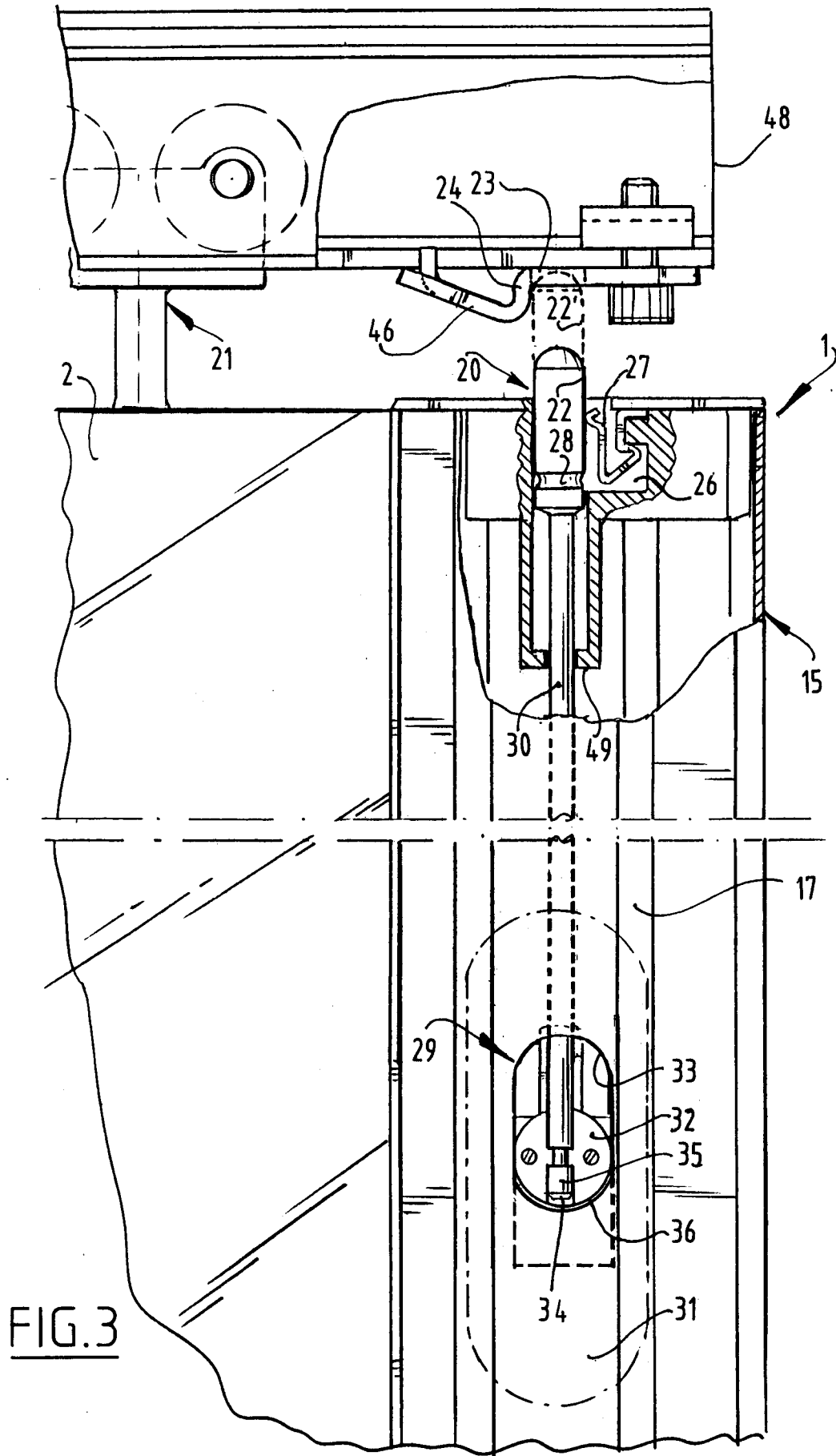
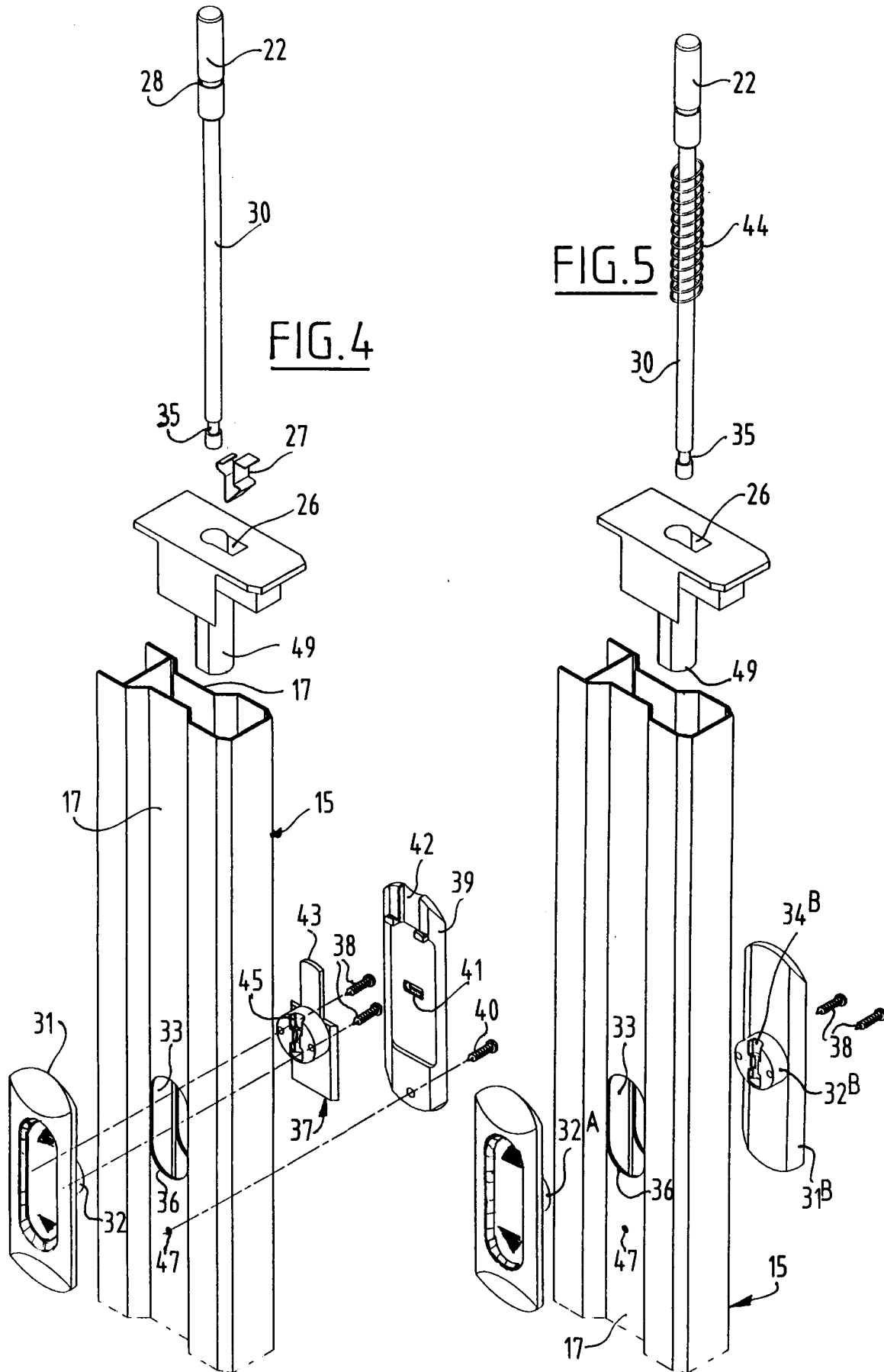


FIG. 2









European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 20 3364

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.6)
X	GB-A-2 187 784 (HARDWARE & SYSTEMS PATENTS LTD) 16 September 1987	1,4	E06B3/88
A	* the whole document *	6,10-12	E05B65/08

A	FR-A-2 720 140 (PLACARDECOR SARL) 24 November 1995	1	
	* page 3, line 30 - page 4, line 37 *		

A	EP-A-0 428 225 (ALPROKON PROMOTIE ONTWIKK BV) 22 May 1991	1,2,4-6, 10-12	
	* the whole document *		

A	US-A-4 790 157 (LIN ANDREW) 13 December 1988	1	
	* the whole document *		

			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E06B
			E05B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		20 February 1997	Verelst, P
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 (P04C01)