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(54) **Door guide for a fireplace, and fireplace provided with such a door guide**

(57) The present invention relates to a guide for a sliding door for connecting to an opening in a wall of a fireplace extending substantially in vertical direction. The present invention relates more particularly to a door guide for a vertically displaceable and transparent sliding door with which an opening in a wall part of a fireplace extending substantially in vertical direction can be shielded and can be made accessible. The invention also relates to a fireplace provided with such a guide.

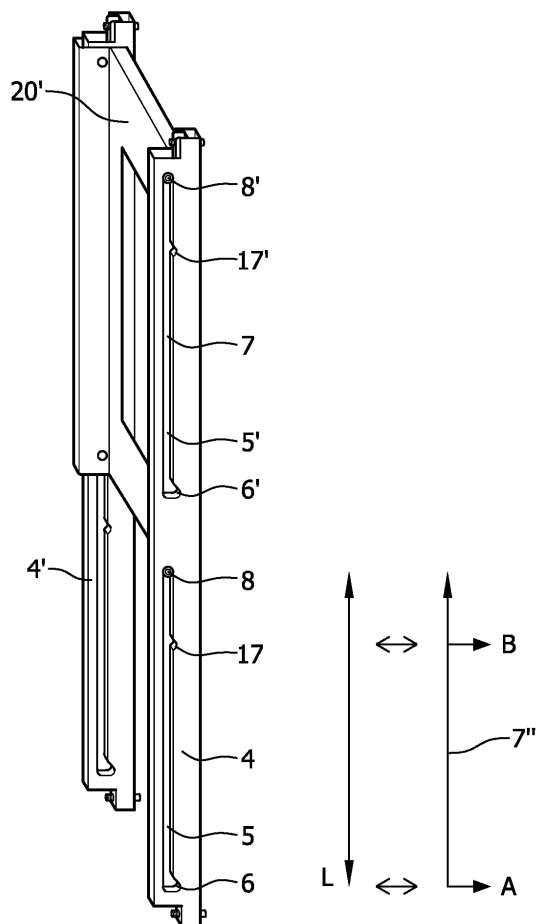


FIG. 3

Description

[0001] The present invention relates to a guide for a sliding door for connecting to an opening in a wall of a fireplace extending substantially in vertical direction. The present invention relates more particularly to a door guide for a vertically displaceable and at least partially transparent sliding door (for instance consisting of a frame-work enclosing a glass ceramic window) with which an opening in a wall part of a fireplace extending substantially in vertical direction can be shielded and can be made accessible. The invention also relates to a fireplace provided with such a door guide.

[0002] Sliding doors for fireplaces are known. The combustion conditions in the fireplace can be well controlled by placing a sliding door preferably connecting properly onto the fireplace. The air supply can for instance thus be fed in controlled manner. A good connection of the sliding door to the fireplace is therefore important, among other reasons, so that no so-called false air is drawn in along the door. It is also important to limit the risk of uncontrolled escape of flue gases or other combustion products (envisage here for instance carbon monoxide, sparks, ash and so forth). The sliding door must also provide access to the combustion space or grate for the purpose of supplying for instance solid fuel (such as wood) and for enabling cleaning of the fireplace. Another relevant feature of the present sliding doors for fireplaces is that they are provided with a window providing a view of the fireplace. Otherwise than in furnaces where only efficiency counts, in the present (ambiance) fireplaces the view of the fire plays a major role; the sought-after atmosphere is hereby obtained. The window in a sliding door is for this purpose usually manufactured from glass ceramic material; this is sufficiently transparent and heat-resistant.

[0003] It is an object of the present invention to provide a guide for a sliding door with window of a fireplace with which a good connection to the fireplace can be obtained and which can be manufactured in relatively simple manner, requires little maintenance and is reliable in use.

[0004] The invention provides for this purpose a guide for a sliding door with window for connecting onto an opening in a wall of a fireplace extending in substantially vertical direction, comprising: two guides extending on either side of and substantially parallel to the opening in the wall part, which guides are each provided with: a first substantially straight vertical guide track substantially parallel to the opening in the wall part and at least one sealing guide track connecting to the vertical guide track and extending in the direction of the opening in the wall part, a carrier structure for holding a transparent shielding plate, provided with protruding guide shafts, and biasing means which engage on the carrier structure and on the vertical and sealing guide tracks of the guides and which exert on the carrier structure a force directed toward the opening in the wall part, whereby the carrier structure is urged in the direction of the opening in the wall part when

the guide shafts are situated at the level of the sealing guide tracks, wherein the biasing means comprise a tube coupled to the guide under a bias directed toward the opening in the wall part, and the guide rollers of the carrier structure comprise shafts passing through the tube, which shafts also support guide rollers engaging on the vertical and sealing guide tracks such that the force generated by the biasing means is transferred by the shafts via the guide rollers to the guides.

[0005] The carrier structure is thus displaceable along the path of the vertical guide track and can hereby be displaced in vertical direction. Upon reaching a sealing guide track, the carrier structure will be urged toward the wall part when no high external forces are exerted on the carrier structure. The reason for this is that, as soon as they reach the sealing guide tracks, the guide rollers become free to move toward the opening in the wall part. The pressure exerted on the carrier structure by the biasing means (provided this force is great enough) causes the freedom enjoyed by the guide rollers to be used directly for displacement of the guide rollers, and so also the guide shafts and thereby also the carrier structure, in the direction of the opening in the wall part. The sealing guide tracks are preferably placed such that, precisely when the guide shafts of the carrier structure arrive at the level of the ideal closing position, the guide rollers have arrived at the level of the sealing guide tracks. It is otherwise also possible to arrange additional locking guide tracks, more particularly in an embodiment such that they are less long (less deep) than the above-mentioned sealing guide tracks at the level of the closing position. The guide is herein provided at multiple locations with the sealing and locking guide tracks, which all connect to the same vertical guide track. The additional locking guide tracks can for instance be used as a locked opened position. As the carrier structure slides upward through the vertical guide tracks in the guides located on either side of the opening for shielding, it is possible to realize in this way that the carrier structure, when reaching a determined position, "snaps fixedly" into the guides without being displaced as far as in the sealing guide tracks. A considerable displacement of the carrier structure is not so necessary here because the object is not now to realize a good sealing. The locking guide tracks need therefore be less long (deep) here. Only a small recess in the vertical guide tracks can already be sufficient for this purpose. The advantage of this additional position is that a user can thus get the idea of having brought the carrier structure to a "correct" level. Yet another option is to arrange additional sealing guide tracks which are so long that the carrier structure connects sealingly to the wall part in which the opening is situated, but then at another position in which the carrier structure fully covers the opening. A position can thus be created with which the carrier structure partially covers the opening; for instance in order to thus create a half-opened position in which a partially opened fireplace can be stoked with little risk of combustion gases escaping.

[0006] The described procedure can of course also be performed in reverse sequence. By applying a sufficiently large force to the carrier structure the guide rollers can once again be urged (pulled) out of the sealing guide tracks counter to the force of the biasing means. The carrier structure will here move a great distance from the opening in the wall part. The force to be applied will here have to be at least greater than the force exerted by the biasing means, since the carrier structure must be displaced counter to this biasing force. Of importance here is the design of the sealing guide tracks; these are desirably provided with chamfered sides which enclose an obtuse angle with the vertical guide track. Such a design has the result that a force applied substantially parallel to the vertical guide tracks (if sufficiently great) can also cause the guide rollers to be urged out of the sealing guide tracks.

[0007] The significant advantage is the very simple operation of the guide according to the present invention. It can be displaced easily and the carrier structure will connect sealingly at the planned positions to the opening in the wall part, or in addition optionally only snap fixedly in a preferred position. In order to once again release the sealing connection or the snap fixing, only a sufficiently great force need be applied, optionally only in the sliding direction (direction of the vertical guide track). The operation of the guide is therefore very simple, involving only sliding the carrier structure upward and downward. No dexterity or skill at all is required for operation of the guide according to the invention. The present guide moreover gives the user "tactile" feedback. Yet another advantage of the guide is that it is very simple to manufacture and reliable in use.

[0008] The biasing means comprise a tube coupled to the guide under a bias directed toward the opening in the wall part, wherein the tube also engages on the guide shafts such that bias is transmitted to the guide rollers. This measure increases the firmness of the construction in simple manner and results in a reliable and constant transmission of the biasing force to the guiding rollers. The tube can be embodied such that the guide shafts provided with guide rollers protrude outward through the tube so as to engage rotatably with the guide rollers on the guides. For a proper operation it is however important that the guide shafts engage with only limited clearance on the tube in a direction perpendicularly of the vertical guide track; the guide shafts thus pass close-fittingly through openings arranged in the tube, at least in a direction perpendicularly of the vertical guide track. In other words, the guide shafts protrude through openings in the tubes which allow space for rotation but which further allow little or no clearance. If the guide shafts can displace in vertical direction relative to the tubes, it is desirable that the guide shafts are provided for this purpose with a tubular roller, via which these components mutually engage. The guide shafts are thus (vertically) displaceable relative to the tubes with relatively little resistance. During displacement of the carrier structure in the guides,

optional tubular rollers will rotate in opposite direction to that of the guide rollers engaging on the guides; both types of roller are thus desirably rotatable independently of each other about the same guide shafts.

[0009] An important advantage of applying the guide shafts which engage on the tube and which also support the guide rollers engaging on the vertical and sealing guide tracks is that this results in a very simple and reliable construction. Only the guide shafts are required for coupling of the carrier structure, the tubes and the guides. Instead of an obvious separate coupling of a tube to a guide track and a coupling of the tube to the carrier structure, these two couplings (although they have to fulfil different functions) are realized with a single construction element. It is however noted here that for a smooth operation of the construction the guide shafts are provided with guide rollers (in the form of for instance running wheels, which may or may not be bearing-mounted, engaging round the guide shafts) at a position where the shaft engages on the guides. The resistance with which the shaft moves along a guide can thus be limited, this resulting in a smoother displaceability of the sliding door.

[0010] The tube, the guide and the carrier structure can advantageously be wholly or partially manufactured from metal profiles. The vertical guide track can be embodied very simply as a slot, while the guide rollers of the carrier structure can be formed by for instance optionally bearing-mounted guide wheels. It is in any case important that the guide rollers engaging on the guides are rotatable.

[0011] In yet another preferred variant the sealing and/or locking guide tracks of the co-acting guides are situated at the same height in the guides. The carrier structure can thus undergo in simple manner a simultaneous displacement (usually an identical displacement) on either side of the opening in the wall part.

[0012] There is complete freedom in the design of the sealing and locking guide tracks. While the vertical guide tracks will generally have a straight form (which defines the slide path), the form of the sealing and locking guide tracks can display much more variation. Sealing guide tracks for the actual sealing displacement of the carrier structure will be much longer than the locking guide tracks intended for marking or limited locking of a determined sliding position. If the sealing and/or locking guide track forming a local widening is provided with chamfered sides, it will be more easily possible to slide the carrier structure out of the sealing or locking position. It is further desirable for the sealing guide track to extend so far in the direction of the wall part that the carrier structure can be placed sealingly against the wall part enclosing the opening.

[0013] For a further improvement of the seal between carrier structure and the wall part (or an edge or upright portion forming part thereof) enclosing the opening, a seal is desirably situated between the carrier structure and the wall part enclosing the opening. Examples of such gaskets are for instance gaskets manufactured from

ceramic fibres.

[0014] In yet another embodiment variant the carrier structure comprises a transparent glass ceramic plate. Such a plate provides a view of the grate, this providing the desired atmosphere. Envisage here the use of the guide according to the invention in fireplaces for application in a domestic environment or in the catering sector.

[0015] The present invention also provides a fireplace provided with a door guide as described above. For the advantages of the fireplace with door guide reference is made to the advantages already listed above. Such a fireplace can particularly be opened and closed in fool-proof manner, this not only enhancing convenience of use but also considerably reducing the risk of incorrect and/or unintentionally hazardous use.

[0016] The invention will be further elucidated on the basis of the non-limitative exemplary embodiments shown in the following figures. Herein

figure 1a is a perspective view of a door guide according to the present invention;

figure 1b shows a view of an enlarged part of the door guide of figure 1a;

figure 2 is a top view of the door guide of figures 1a and 1b;

figure 3 is a partly cut-away view of the door guide of the foregoing figures; and

figure 4 is a perspective view of the door guide of the foregoing figures.

[0017] Figure 1a is a perspective view of a door guide 1 for an opening 2 in a wall part 3 of a fireplace extending substantially in vertical direction. Door guide 1 is provided with guides 4, these guides 4 comprising a vertical guide track 5 with a vertical (V) directional component substantially parallel to wall part 3. Connecting to the underside of the slot-like vertical guide track 5 is a sealing guide track 6 having at least a horizontal (H) directional component perpendicularly of wall part 3.

[0018] The vertical guide track 5 and the sealing guide track 6 are arranged in guides 4 in which a carrier structure 20 is mounted by means of guide shafts 8 - provided with guide rollers not shown in this figure - connected to carrier structure 20. Guide shafts 8 and the guide rollers are further elucidated below.

[0019] Figure 1b shows how the sealing guide track 6 is formed by a local widening 9 of the slot forming the vertical guide track 5 on a side of the vertical guide track 5 facing toward wall part 3. The local widening 9 decreases gradually in width in an upward direction. At the position where they engage an vertical guide tracks 5, guide shafts 8 of carrier structure 20 are enclosed by rotatable guide rollers 19. Guide rollers 19 are mounted in guides 4 under a bias (see arrow 11) directed toward wall part 3. During a displacement in vertical direction (V) they will pass through a linear path of movement 10. When carrier structure 20 is displaced further downward, it will follow a track part 10a, wherein the bias (as according to arrow

11) causes the guide shaft 8 of carrier structure 20, after it has passed through linear path of movement 10, to follow the track part 10a made up of a vertical (V) and a horizontal (H) movement component. When carrier structure 20 is displaced upward, guide shaft 8 will follow the path of movement 10a in reverse direction, whereby carrier structure 20 (at least at the position of guide shaft 8) is gradually moved away from wall part 3. This is because carrier structure 20 is coupled rigidly to guide shafts 8 and therefore follows a movement in horizontal direction which is dictated by the combined guide shafts 8. In order to bring about smooth and low-noise displacement of carrier structure 20, each guide shaft 8 is also provided with a tubular roller 18 which rolls along a tube 13. Tube 13 forms part of the biasing means further elucidated below.

[0020] Figure 2 is a top view of door guide 1 of figures 1a and 1b. Door guide 1 is provided with a carrier structure frame 12 which forms part of carrier structure 20 and in which guide shaft 8 is received. The carrier structure frame 12 is formed by a profile engaging partially round guide 4. Guide shaft 8 extends through guide track 5 and guide track 6 which are arranged in guide 4. Carrier structure 20 can thus be moved vertically, wherein guide shaft 8 and thereby carrier structure 20 follow guide tracks 5, 6 in guide 4.

[0021] In order to ensure that during a vertical displacement guide shaft 8 is pressed out of the vertical guide track 5 into the sealing guide track 6, guide shaft 8 is placed under a bias (as according to arrow 11) directed toward wall part 3. The bias is realized in that guide shaft 8 is also engaged by a tube 13, preferably in that guide shaft 8 lies close-fittingly in a vertical slot arranged for this purpose in tube 13. The bias on tube 13 is realized by a spring 16. Tube 13 is connected for horizontal displacement to guide 4 by a bolt 15, wherein spring element 16 is arranged between guide 4 and tube 13. Tube 13 extends in vertical direction over a similar height as guide 4, whereby guide shaft 8 is under a continuous bias directed toward wall part 3 during displacement of carrier structure 20 in vertical direction. For this purpose tube 13 is preferably connected in the vicinity of both its upper and lower outer end to guide 4 via a spring element 16, 16'. Tube 13 is hereby wholly under bias, and this bias is transmitted by tube 13 to guide shaft 8 irrespective of the height at which guide shaft 13 is situated.

[0022] Figure 3 shows a partially cut-away view of carrier structure 20 which is displaceable in guide 4, wherein two vertical guide tracks 5, 5' located one above the other are shown in guide 4. Guide track 5' has the same form as guide track 5. Carrier structure 20 is mounted on one side in guide 4 by means of two guide shafts 8, 8'. The respective vertical guide tracks 5, 5' are both provided with an associated sealing guide track 6. Vertical guide tracks 5, 5' are of identical form and lie parallel to each other. Carrier structure 20 hereby remains substantially parallel to wall part 3 (in any case at least on the shown side of carrier structure 20) irrespective of its position relative to the guide.

[0023] Further arranged in guide 4 are two locking path parts 17 and 17' which also extend in the direction of wall part 3 (to limited extent relative to the sealing guide tracks 6, 6') with a horizontal directional component in a direction away from the vertical guide tracks 5, 5'. The locking path parts 17, 17' are situated at a distance from the sealing guide tracks 6, 6'. As a result of the bias exerted on guide shafts 8, 8' via tube 14 the carrier structure 20 can hereby also be locked in an opened, i.e. upward placed, position at a location where guide shafts 8, 8' are situated at the level of locking path parts 17, 17'. Arrows 7 indicate how carrier structure 20 can be displaced from a position sealing the opening to a position leaving the opening clear, wherein carrier structure 20 can be fixed in both positions in that guide shafts 8, 8' are urged by the bias into the sealing guide tracks 6, 6' or locking path parts 17, 17'.

[0024] The sealing guide tracks 6, 6' here extend at least so far that, at least in an outer end of the sealing guide tracks 6, 6' remote from the vertical guide tracks 5, 5', carrier structure 20 lies against wall part 3 so that an airtight closure of opening 2 is obtained. In the opened position in which guide shafts 8, 8' are situated in the outer end of the sealing guide tracks 6, 6' facing toward wall part 3 sealing is not necessary and it is possible to suffice with a length of path 8 such that carrier structure 20 remains in the opened position. A sealing guide 4' is placed on either side of opening 3.

[0025] Figure 4 is a perspective view of door guide 1 of the foregoing figures in which a transparent ceramic plate 21 is held in carrier structure 20. Ceramic plate 21 is fireproof. Diverse variants which all fall within the scope of protection of the following claims are possible in addition to the shown embodiment.

Claims

1. Guide for a sliding door with window for connecting onto an opening in a wall of a fireplace extending in substantially vertical direction, comprising:
 - two guides extending on either side of and substantially parallel to the opening in the wall part, which guides are each provided with:
 - o a substantially straight vertical guide track substantially parallel to the opening in the wall part, and
 - o at least one sealing guide track connecting to the vertical guide track and extending in the direction of the opening in the wall part,
 - a carrier structure for holding a transparent shielding plate, provided with protruding guide shafts, and
 - biasing means which engage on the carrier structure and on the guides and which exert on

the carrier structure a force directed toward the opening in the wall part, whereby the carrier structure is urged in the direction of the opening in the wall part when the guide shafts are situated at the level of the sealing guide tracks,

characterized in that

the biasing means comprise a tube coupled to a guide under a bias directed toward the opening in the wall part, and that the guide shafts of the carrier structure pass through the tube, and wherein the guide shafts also support guide rollers engaging on the vertical and sealing guide tracks such that the force generated by the biasing means is transferred by the shafts via the guide rollers to the guides.

2. Door guide as claimed in claim 1, **characterized in that** the guide shafts pass close-fittingly through openings arranged in the tube.
3. Door guide as claimed in claim 1 or 2, **characterized in that** the vertical guide track comprises a slot.
4. Door guide as claimed in any of the foregoing claims, **characterized in that** the guides are provided with at least one locking guide track connecting to the vertical guide track and extending in the direction of the opening in the wall part.
5. Door guide as claimed in any of the foregoing claims, **characterized in that** a guide shaft engages on the tube via a tubular roller connected rotatably to the guide shaft.
6. Door guide as claimed in any of the foregoing claims, **characterized in that** the sealing guide tracks and/or the locking guide tracks of the co-acting guides are situated at the same height in the guides.
7. Door guide as claimed in any of the foregoing claims, **characterized in that** a guide is provided at multiple locations with the sealing guide tracks and/or locking guide tracks, which all connect to the same vertical guide track.
8. Door guide as claimed in any of the foregoing claims, **characterized in that** a sealing guide track and/or the locking guide tracks are formed by a local widening of a slot-like vertical guide track.
9. Door guide as claimed in claim 8, **characterized in that** the sealing guide track and/or locking guide track forming the local widening is provided with chamfered sides.
10. Door guide as claimed in any of the foregoing claims, **characterized in that** the sealing guide track ex-

tends so far in the direction of the wall part that the carrier structure can be placed sealingly against the wall part enclosing the opening.

11. Door guide as claimed in any of the foregoing claims, *5*
characterized in that a seal is situated between the carrier structure and the wall part enclosing the opening.
12. Door guide as claimed in any of the foregoing claims, *10*
characterized in that the carrier structure comprises a transparent glass ceramic plate.
13. Fireplace provided with a door guide as claimed in any of the foregoing claims. *15*

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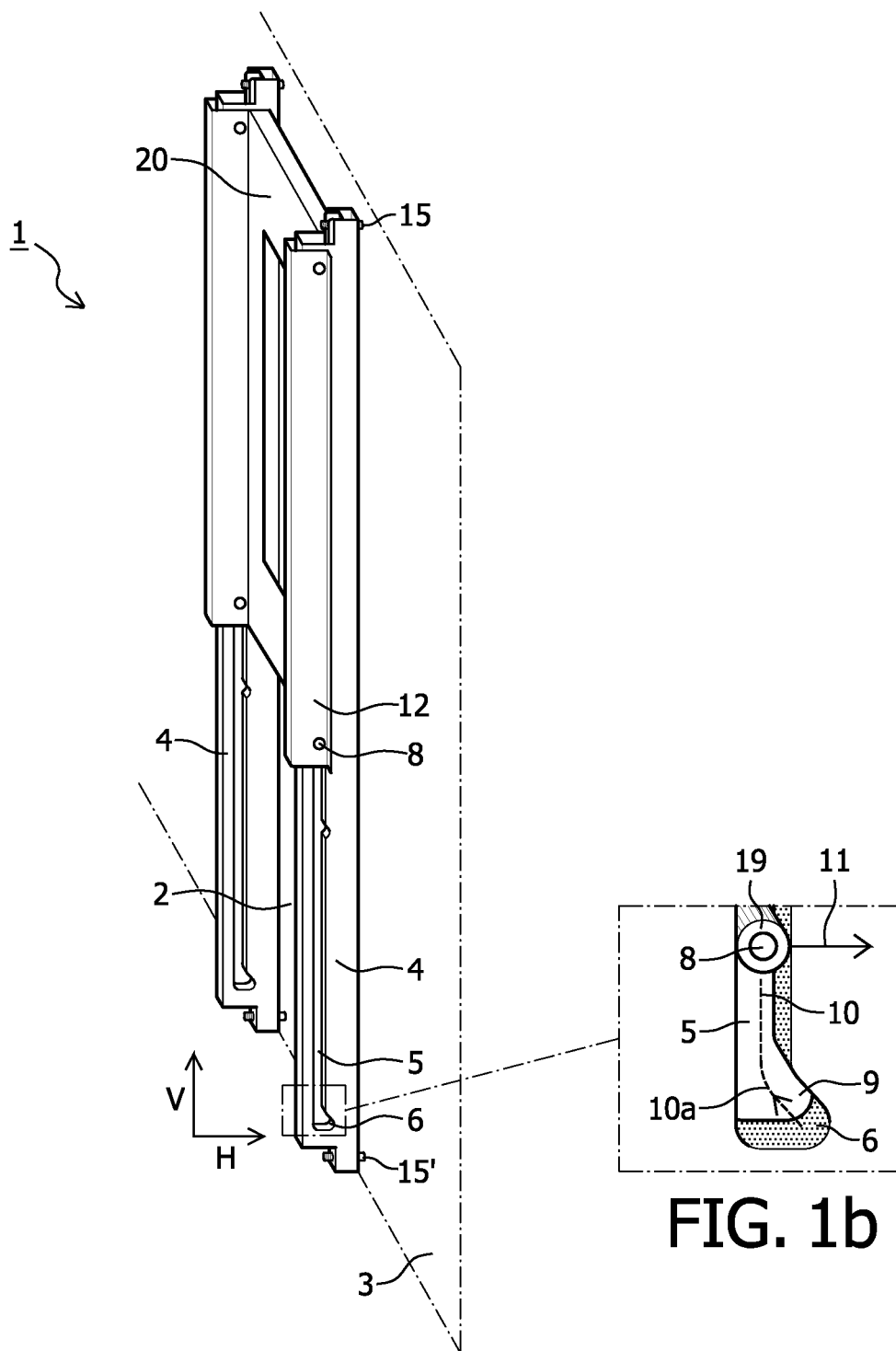


FIG. 1a

FIG. 1b

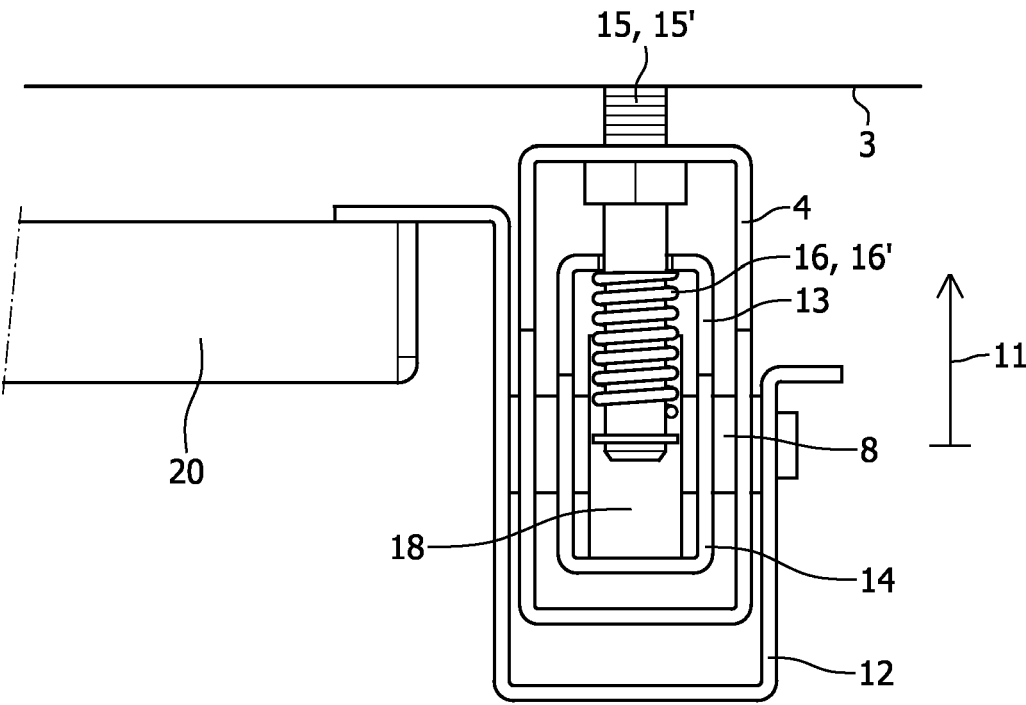


FIG. 2

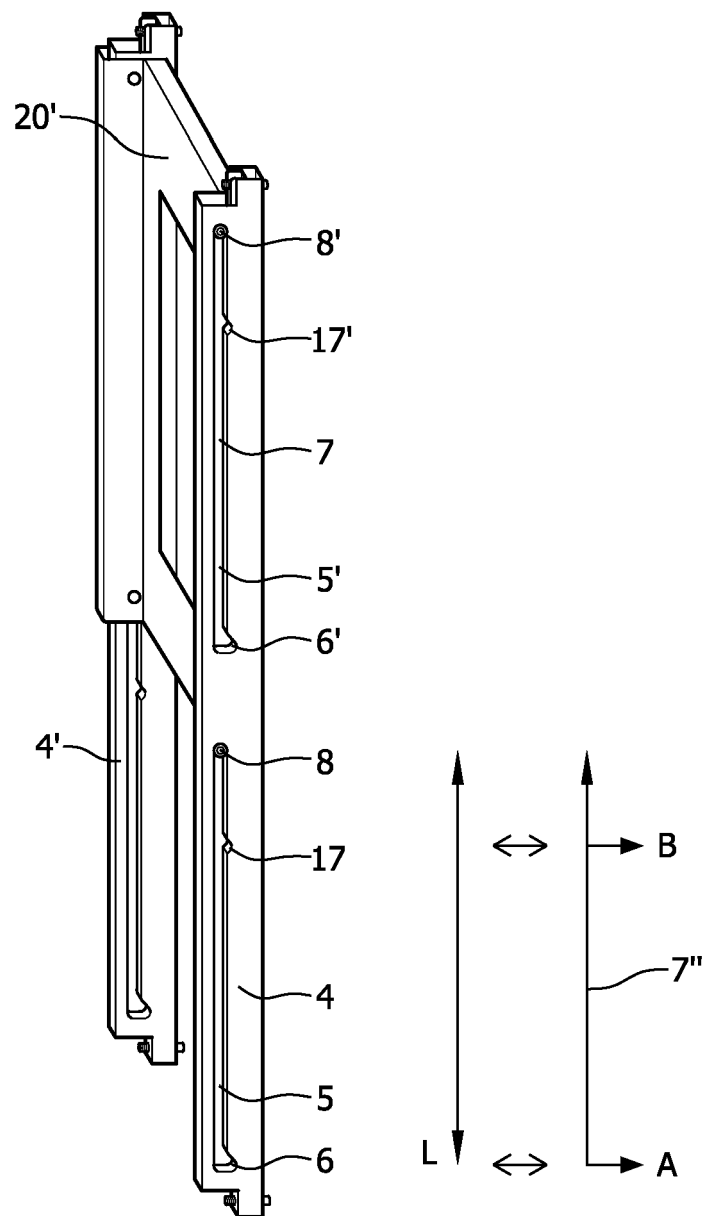


FIG. 3

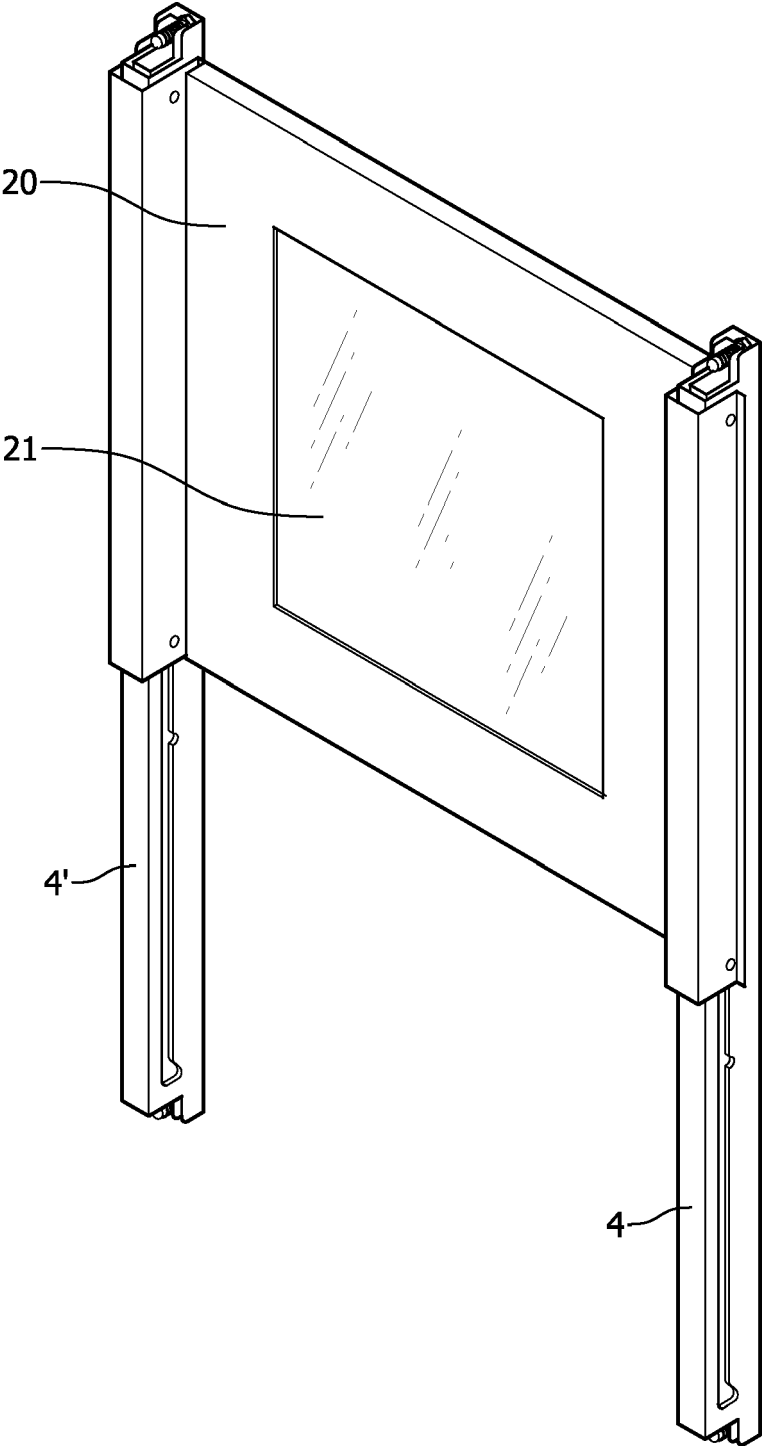


FIG. 4



EUROPEAN SEARCH REPORT

Application Number
EP 10 16 0467

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	EP 1 591 726 A2 (CERA DESIGN BY BRITTA V TASCH [DE]) 2 November 2005 (2005-11-02)	1,6,7, 10-13	INV. F24B1/192 E05D15/20
Y	* paragraph [0056] - paragraph [0059]; figures 3,4,8 *	3	
Y	----- US 4 884 556 A (ALDEN FRANK [US] ET AL) 5 December 1989 (1989-12-05) * column 5, line 25 - column 6, line 27; figures 5,6 *	3	
A	----- DE 34 01 332 A1 (ROESLER KAMINE OPENFIRE [DE]) 25 July 1985 (1985-07-25) -----	1-13	
			TECHNICAL FIELDS SEARCHED (IPC)
			F24B E05D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		2 September 2010	Verdoodt, Luk
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 10 16 0467

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
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02-09-2010

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1591726	A2	02-11-2005	DE 102004021712 A1	24-11-2005
US 4884556	A	05-12-1989	NONE	
DE 3401332	A1	25-07-1985	NONE	