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(54) Building sliding door arrangement, use of a sealing portion and method for arranging a sealing portion

(57) A building sliding door arrangement (1; 101; 201; 301), which comprises guide rails (3; 103; 203; 303) that are arranged for guiding at least one door section (5; 105; 205; 305; 405) during a movement operation between a closed position and an open position, and vice versa, wherein movement of said at least one door section (5; 105; 205; 305; 405) is relative to at least one part of a fixed structure arrangement (7; 107; 207; 307; 407), wherein said at least one part of the fixed structure arrangement (7; 107; 207; 307; 407) propagates along at least part of the movement operation direction of the at least one door section (5; 105; 205; 305; 405) when the at least one door section (5; 105; 205; 305; 405) is in its closed position. The building sliding door arrangement (1; 101; 201; 301) is arranged with a flocked section (9; 109; 209; 309; 409), which is arranged to form part of a sealing portion between the at least one door section (5; 105; 205; 305; 405) and the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407). The invention also discloses the use of a sealing portion and a method for arranging a sealing portion between a door section (5; 105; 205; 305; 405) and at least one part of a fixed structure arrangement (7; 107; 207; 307; 407) for a building sliding door arrangement (1; 101; 201; 301).

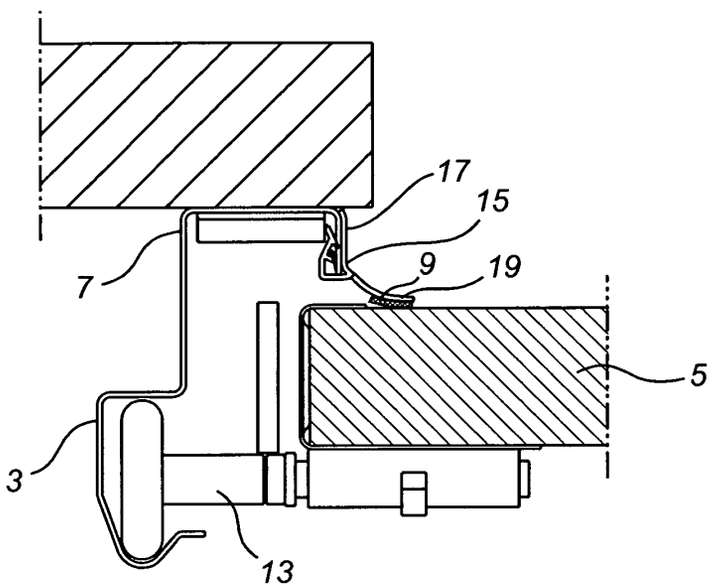

Fig. 4a

EP 1 574 658 A1

Description

Technical field

[0001] The present invention relates to a building sliding door arrangement, which comprises guide rails that are arranged for guiding at least one door section during a movement operation between a closed position and an open position, and vice versa. The invention also relates to the use of a building sliding door arrangement and a method for arranging a sealing portion between at least one door section and at least one part of a fixed structure arrangement for a building sliding door arrangement.

Technical background

[0002] A building sliding door arrangement of the kind disclosed in the preamble of claim 1 usually comprise guide rails, in which runners attached to a door leaf, or the door leaf itself, are movably received in said guide rails for provision of a sliding movement between an open position and a closed position of the door arrangement. This kind of building sliding doors includes a number of different types of designs, such as overhead doors, horizontal sliding doors, folding doors, roller doors etc. There is often a need for additional sealing effect between the door leaf and the building in the closed position. Said sealing effect is generally achieved by an arrangement of seals that extending along the door leaf in the direction of the sliding movement between an open position and a closed position of the door arrangement.

[0003] A proper sealing effect by such a sealing arrangement is for instance important in order to achieve a weather protection, which may resist against weather and wind. In general, demands are high for such weather sealings arranged along the direction of the movement of the door between the closed and open position, and especially high demands apply for sealings which extends in a substantially vertical direction. Further, a sealing may prevent loose particles and objects from accumulating around and near the door arrangement.

[0004] WO96/02725 describes a prior-art building sliding door arrangement wherein the sealing effect between the door leaf and the building is established by means of a rubber moulding which is arranged between the movable door leaf and the building. Different kind of arrangements for sliding door arrangements, which comprise a rubber moulding extending along the operation direction of the door leaf, has been used for along time. However, non of the prior-art solutions provides a sliding door arrangement with the combination of a proper sealing effect and a suitable operation property.

[0005] Such an arrangement of a rubber moulding which bear against the door leaf is a potential cause of a high friction sliding contact force during movement of the door leaf between the closed position and the open position. This is especially an issue for sliding door applications with high demands concerning sealing effect, since the sealing effect, among other things, is dependent on the bearing force between the sealing and the door leaf.

[0006] Further, conventional sealings often generate forces between the door leaf and the sealing, which causes a need of a substantially high operation force for the movement of the door leaf between the open and closed position. Accordingly, the output capacity of the driving means, for instance an electric motor, used for the movement of the door leaf therefore has to be dimensioned in relation to the level of sealing effect. For manually operated doors, the need of a substantially high operation force may be an issue that may cause a person operating the door inconveniences during the closing and opening of the sliding door arrangement.

[0007] Additionally, it is also realized that prior art sealings experiences, or even worse, causes unwanted wear of the door arrangement. Especially, there is a risk that the sealing is exposed to wear, and consequently has to be replaced frequently in order to maintain proper sealing effect.

[0008] Another issue for prior art sealings, is that worn-off material from the sealing during operation may adhere to the door arrangement. Such worn-off material may cause a non-attractive appearance of the door arrangement.

[0009] During operation of the prior art sliding door arrangements, the contact between the door leaf against the sealing may also cause an unsatisfying noise during the movement of the door leaf between the closed and open position. The noise is often disturbing for persons staying nearby the sliding door arrangement.

[0010] JP11247552 discloses an alternative prior-art building sliding door arrangement, which is arranged with "brush-like" elements provided between the movable door leaf and the building. These "brush-like" elements may obtain a substantially untight contact between the door leaf and the building, which may not provide a suitable sealing effect between the door leaf and the building in the closed position of the door arrangement. Further, the "brush-like" elements generally is orientated in the direction of the door leaf movement, such as the "brush-like" elements is pointing in the direction of the last movement of the door leaf. Accordingly, the "brush-like" elements have to be reorientated when the direction of the door leaf movement is alternated. The force to be applied for the reorientation of the "brush-like" elements may cause a need of a substantially high operation force when the direction of movement of the door leaf is changed.

[0011] Hence, there is a need for an improved sealing for building sliding door arrangements which allows for a proper sealing as well as proper operation conditions during the life cycle of such a door arrangement.

Summary of the invention

[0012] Hence, it is an object of the present invention to provide a high quality building sliding door arrangement which presents an improved sealing.

[0013] These and other objects are achieved by a building sliding door arrangement according to claim 1, the use of a building sliding door arrangement according to claim 15 and a method according to claim 16. Preferred embodiments of the invention are defined in the dependent claims.

[0014] For this purpose, according to the invention, a building sliding door arrangement is provided, which comprises guide rails that are arranged for guiding at least one door section during a movement operation between a closed position and an open position, and vice versa, wherein movement of said at least one door section is relative to at least one part of a fixed structure arrangement, wherein said at least one part of the fixed structure arrangement propagates along at least part of the movement operation direction of the at least one door section when the at least one door section is in its closed position, characterized in that a flocked section is arranged to form part of a sealing portion between the at least one door section and the at least one part of the fixed structure arrangement.

[0015] The flocked section arranged between the at least one door section and the at least one part of the fixed structure arrangement provides numerous advantages, for instance the working life of the sliding door arrangement will be considerably enhanced compared to prior art sliding door arrangements. The flocked section arranged between the at least one door section and the at least one part of the fixed structure arrangement, will provide a sliding door arrangement which requires a substantially low operation force. The need of a low operation force is especially important for manually operated doors, but is of great advantage for machinery operated doors as well, since the driving unit of the door may be dimensioned in a economically way. The sealing portion, which is at least partly arranged by means of the flocked section, further gives the sliding operation door the advantage of a substantially low level of noise during operation.

[0016] Preferably, said flocked section of the building sliding door arrangement forms part of a sealing portion between at least one lateral edge portion of the at least one door section and the at least one part of the fixed structure arrangement, wherein the lateral edge portion propagate along the movement operation direction.

[0017] This arrangement provides for a robust and simple sealing portion between the door section and the building. The location and design of the flocked section is considered important with regard to the resulting effect generated by the sealing portion.

[0018] Suitably, the sealing portion between the at least one door section and the at least one part of the fixed structure arrangement, according to the building sliding door arrangement, is arranged to provide an additional sealing effect in the closed position.

[0019] Such a additional sealing effect may, with an at the same time maintained proper operation of the door arrangement, for instance prevent loose particles and objects from accumulating around and near the door arrangement. The additional sealing effect constitutes a weather protection, which resist against wind and/or rain etc.

[0020] Advantageously, the building sliding door arrangement at least is provided with one sealing element to form part of the at least one door section and/or the at least one part of the fixed structure arrangement.

[0021] According to one embodiment of the invention, the building sliding door arrangement is provided with at least one sealing element attached to the at least one door section.

[0022] According to another embodiment of the invention, the building sliding door arrangement is provided with at least one sealing element attached to the at least one part of the fixed structure arrangement.

[0023] By arranging said sealing element, preferably made of a rubber-like material, such as EPDM (Ethylene Propylene Diene Monomer) or TPE (ThermoPlastic Elastomer), to the building sliding door arrangement, an advantageously sealing effect is obtained between the at least one door section and the building, at least in the closed position of the sliding door arrangement. The flocked section is preferably arranged between the sealing element and a structure which bear against the sealing element with a slidable sealing contact. This preferred configuration constitutes a sliding door arrangement with suitable operation properties and at the same time an advantageously weather protection, which resist against weather and/or wind.

[0024] Further advantages obtained by use of the flocked section, is that different types of sealing element geometry, such as lip sealing, tube sealing, foam filled sealing etc, may be used with proper sealing effect. In one preferred embodiment the building sliding door arrangement is provided with a lip sealing.

[0025] According to one preferred embodiment of the building sliding door arrangement, the flocked section is attached to the at least one sealing element. This arrangement having for instance the advantage of making it possible to use one design of the sealing element, provided with a flocked section, for a plurality of different building sliding door designs, wherein a economically configuration for the arrangement of the sealing element is obtained. Further, the attachment of the flocked section to the sealing element gives the possibility of replacing the flocked section, in case of being worn out, by exchange of the sealing element. Yet another advantages by attaching the flocked section to the sealing element, is the possibility of replacing existing sealings used for sliding door arrangements with a flocked sealing.

[0026] In a particularly preferred embodiment, the at

least one sealing element is arranged substantially in a vertical direction. The demands for a weather protection is especially critical for a vertically operated sliding door arrangements, for instance the preferred embodiment of an overhead door arrangement. Therefore, a sealing element, provided with a flocked section, which extends substantially vertical along the operation direction of the at least one door section gives a proper sealing effect in combination with advantageously obtained operation qualities.

[0027] Preferably, the flocked section is applied on a carrier structure, which is attached to the building sliding door arrangement. The use of a carrier structure, to which the flocked section is attached, provides a flexible and inexpensive method of arranging a flocked section to the sliding door arrangement. The attachment of the carrier structure to the sliding door arrangement may be performed by means of generally known methods, such as adhesive, fusion welding, riveting, screwing etc. Further, the arrangement of the flocked section by means of a carrier structure allows for a generally design, which may be used for a plurality of different configurations of the building sliding door arrangements. Said carrier structure is preferably formed as an elongated belt, suitably made of a polymer material, a fabric material or a metal material. In one particularly preferred embodiment, the carrier structure may be attached to the building sliding door arrangement by an adhesive, wherein the material of the carrier structure and the door arrangement is brought together to form a resistant connection.

[0028] In one preferred embodiment, said carrier structure may be provided as a tape device to which the flocked section is applied. The tape device is intended to be attached to the building sliding door arrangement. By using a tape device arranged with a flocked section, a simple placement and replacement of the flocked section, when worn out, may be provided as well.

[0029] Suitably, the flocked section comprises at least one of the fiber materials from the group of nylons, polyesters, polyamides, polyacrylonitrile, polyethylene, polypropylen, Nomex®, Aramid, Isovyl®, cotton, wool, vicose rayon, cellulose triacetate, Lyocell® or the like. The fiber material used for the flocked section may be selected depending on the driving conditions and the environmental conditions there the building sliding door arrangement is intended to be used. Furthermore, the fiber materials may be attached by means of an adhesive in order to obtain the flocked section.

[0030] According to another object of the invention, a method is provided for arranging a sealing portion between at least one door section and at least one part of a fixed structure arrangement for a building sliding door arrangement, which building sliding door arrangement comprises guide rails that are arranged for guiding the at least one door section during a movement operation between a closed position and an open position, and vice versa, wherein movement of said at least one door section is relative to the at least one part of the fixed structure arrangement, wherein said at least one part of the fixed structure arrangement propagates along at least part of the movement operation direction of the at least one door section when the at least one door section is in its closed position, wherein the method comprising the steps of, arranging and attaching a flocked section to form part of the sealing portion between the at least one door section and the at least one part of the fixed structure arrangement.

[0031] In one preferred embodiment of the invention, the method of arranging a sealing portion comprising, arranging said flocked section to form part of a sealing portion between at least one lateral edge portion of the at least one door section and the at least one part of the fixed structure arrangement, wherein the lateral edge portion propagate along the movement operation direction. According to a particularly preferred embodiment, the method comprising, arranging the flocked section between the at least one door section and the at least one part of the fixed structure arrangement in order to obtain an additional sealing effect in the closed position.

[0032] According to one embodiment of the invention, the method of arranging a sealing portion comprising, arranging the flocked section on the at least one door section and/or the at least one part of the fixed structure arrangement. In a particularly preferred embodiment the method comprising, arranging the flocked section on at least one sealing element which is provided to form part of the at least one door section and/or the at least one part of the fixed structure arrangement.

[0033] Yet another embodiment of the invention, regarding to the method for arranging a sealing portion between at least one door section and at least one part of a fixed structure arrangement for a building sliding door arrangement, comprising the initial step of removing a sealing of any kind attached to the building sliding door arrangement between the at least one door section and the at least one part of the fixed structure arrangement for purpose of sealing replacement. The replacement of the sealing, in order to provide a sealing element with a flocked section forming part of a sealing portion, makes it possible to equip existing sliding door arrangements with an solution in accordance with the invention. This is an economically and simple way of providing existing sliding door arrangements with a proper weather protection and at the same time keeping the operation properties maintained or improved.

Brief description of the drawings

[0034] Currently preferred embodiments of the present invention will now be described in more detail, with reference to the accompanying drawings.

[0035] Fig. 1 is a schematic perspective view of an overhead building sliding door arrangement, in a closed position.

[0036] Fig. 2 is a schematic perspective view of a

building roller door arrangement, in an open position.

[0037] Fig. 3a is a schematic view of a building sideway sliding door arrangement, in an partially open position.

[0038] Fig. 3b is a schematic view of an alternative embodiment of a building sideway sliding door arrangement, in an partially open position.

[0039] Figs. 4a-4f are cross sectional views taken from section IV-IV in Fig. 1, showing different embodiments according to the invention.

[0040] Figs. 5 is a cross sectional view taken from the section V-V in Fig. 2, showing an alternative embodiment according to the invention.

[0041] Fig. 6 is a cross sectional view taken from the section VI-VI in Figs. 3a and 3b, showing an alternative embodiment according to the invention.

[0042] Fig. 7 is schematic perspective view of a sealing portion arranged as a belt device extending along the door section of the building sliding door arrangement.

Detailed description of the drawings

[0043] Referring now to Figs. 1-3b, wherein a building sliding door arrangement comprises guide rails 3; 103; 203; 303 that are arranged for guiding at least one door section 5; 105; 205; 305 during a movement operation between a closed position and an open position, and vice versa, wherein movement of said at least one door section 5; 105; 205; 305 is relative to at least one part of a fixed structure arrangement 7; 107; 207; 307, wherein said at least one part of the fixed structure arrangement 7; 107; 207; 307 propagates along at least part of the movement operation direction of the at least one door section 5; 105; 205; 305 when the at least one door section 5; 105; 205; 305 is in its closed position. Further, the building sliding door arrangement 1; 101; 201; 301 comprises a flocked section 9; 109; 209; 309 that is arranged to form part of a sealing portion between the at least one door section 5; 105; 205; 305 and the at least one part of the fixed structure arrangement 7; 107; 207; 307.

[0044] Figs. 1-3b shows a selection of different building sliding door arrangements 1; 101; 201; 301, wherein Fig. 1 shows a overhead door 1, Fig. 2 shows a roller door 101 with a flexible door section and Figs. 3a-b shows two different sideway sliding doors 201; 301. Building sliding door arrangements 1; 101; 201; 301 of the type exemplified by Figs. 1-3b may be provided as manually operated doors as well as machinery installations. It generally shall be noted that vertically or horizontally operated doors, provided with a plurality of foldable door sections, slidable arranged in guide rails, which door sections in the open position of the door arrangement are gathered together at one side, or two sides, of the opening bay, are examples of building sliding door arrangement according to the invention.

[0045] The building sliding door arrangement 1 shown in Fig. 1 illustrates an essentially conventional overhead sliding door consisting of a plurality of door sections 5, which are hingedly joined together along horizontal pivot elements 11. The number of door sections depends on the height of the door opening for which the overhead sliding door 1 is intended. At each one of the vertical side edges of the door opening, at least one part of a fixed structure arrangement 7 extends, which is partly provided as a vertical guide rail portion 3. The door sections 5 are connected with and guided by the guide rails 3 via runners 13, which preferably are rollers disposed in said rails, said rollers 13 being mounted on shafts attached to the door sections 5. The weight of the door arrangement 1 is balanced by means of a balancing spring.

[0046] The sliding door arrangement 1 according to Figs. 1 and 4a-4f further comprises a flocked section 9 arranged between the door sections 5 and the at least one part of the fixed structure arrangement 7, which partly forms the guide rail 3. The flocked section 9 is arranged to form part of a sealing portion between the door sections 5 and the at least one part of the fixed structure arrangement 7. Said sealing portion is arranged to extend in the operation direction of the door sections 5 when moved between a closed position and an open position, and vice versa.

[0047] According to one embodiment of the overhead sliding door, shown in Fig. 4a-4f in a cross sectional view on the line IV-IV in Fig. 1, the at least one part of the fixed structure arrangement 7 is arranged as one in the operation direction of the door extending profiled element, which having a configuration allowing it to be applied against the side portion of the door opening.

[0048] With reference to Figs. 4a-4f examples of different embodiments regarding the arrangement of the flocked section 9 for overhead doors 1 according to Fig. 1 will be described below. Figs. 4a-4b shows a sealing element 15, preferably made of a rubber like material, such as EPDM (Ethylene Propylene Diene Monomer) or TPE (ThermoPlastic Elastomer), which sealing element 15 is provided to form part of the at least one part of the fixed structure arrangement 7. The sealing element 15 according to Figs. 4a-4b is provided with an engagement portion 17 and a lip portion 19. According to one preferred embodiment shown in Fig. 4a-4b, said engagement portion 17 is U-shaped, which gives the possibility of attaching the sealing element 15 by means of a gripping force to the at least one part of the fixed structure arrangement 7. The lip portion 19 of the sealing element 15 is arranged to be brought into contact with the door sections 5 in at least the closed position of the door arrangement 1.

[0049] A flocked section 9, as seen in Fig. 4a, is in one preferred embodiment attached to the lip portion 19 of the sealing element 15 to form part of the sealing portion between the door sections 5 and the at least one part of the fixed structure arrangement 7. Thus, the flocked section 9 forms an interface between the mov-

able door sections 5 and the at least one part of the fixed structure arrangement 7. Fig. 4b shows an alternative embodiment of the invention, there the flocked section 9 is attached to the door sections 5, instead of the sealing element 15 as described above for the door arrangement 1 according to figure 4a.

[0050] Now referring to Figs. 4c and 4d, wherein an alternative embodiment of the overhead sliding door arrangement 1 is obtained by attaching the sealing element 15 to form part of at least one door section 5. The engagement portion 17, according to the sealing element 15 shown in Figs. 4c-4d, is formed as a plan surface and attached to the door sections 5 by means of for instance a clamping holder forming part of a door section 5. In a similar way as for the embodiment shown in Fig. 4a, the flocked section 9, as shown in Fig. 4c, is attached to the sealing element 15 that is arranged as a part of the door sections 5 and in a similar way as for the embodiment shown in Fig. 4b, the flocked section 9, as shown in Fig. 4d, is attached to the at least one part of the fixed structure arrangement 7.

[0051] Additionally alternative embodiments for the arrangement of the flocked section 9 as a part of a sealing portion for an overhead sliding door arrangement 1 is shown in Figs. 4e-4f. According to Fig. 4e, the flocked section 9 is provided on a tube sealing which is attached to, and forming part of, the at least one part of the fixed structure arrangement 7, wherein the flocked section 9 forming part of a sealing portion that interfere with the door sections 5 at least in the closed position of the door arrangement 1. According to Fig. 4f, the flocked section 9 is provided on a tube sealing which is attached to, and forming part of, at least one part of a door section 5, wherein a sealing portion that interfere with the at least one part of the fixed structure arrangement 7 is obtained, at least in the closed position of the door arrangement 1. It is understood that the flocked section 9, in alternative embodiments, may be attached to the door sections 5 and the at least one part of the fixed structure arrangement 7 respectively.

[0052] Different arrangements of a sealing portion, at least partly provided with a flocked section 109; 209; 309, may be supplied in a similar way, as described above, for roller door arrangements 101 and sideway sliding door arrangements 201; 301. Examples of such arrangements of sealing portions, at least partly provided with a flocked section 109; 209; 309, will now be described below.

[0053] Referring now to Figs. 2 and 5, wherein a roller door arrangement 101 comprises a flexible door section 105, wound on a winding roller 121 which is mounted rotatably at the door opening. The roller door arrangement 101 is provided with operation members 123, manually or machinery operated, for applying a force on the flexible door section 105, to enable the flexible door section 105 to be movable between a closed position and an open position. The lateral portions of the flexible door section is provided with a protruding portion 125 adapted for being guided by a guide channel 103 and holding the flexible door section 105 between the guide channels 103. The guide channels 103 forms part of at least one part of a fixed structure arrangement 107 which is attached to the building. Further, the guide channel 103 is provided with a feed track 127, which is arranged for a lead-through of the flexible door section 105 from the guide channel 103.

[0054] The exemplified roller door arrangement 101 according to Fig 2. has a flexible door section 105 that is held substantially stretched between the guide channels 103. The flexible door section 105 has at least one slit 129 extending in the longitudinal direction of the flexible door section 105. The slit 129 is provided with a reconnectable link portion 131, said reconnectable link portion 131 being adapted to engage the door leaf slit 129 and disengage when exposed to impact exceeding a threshold value. For a person skilled in the art, it is realized that a roller door arrangement 101 in accordance with the abovementioned example only represent one specific design among several different ways of providing a roller door. For instance the roller door may be designed as a lamella roller door.

[0055] Referring now to Fig. 5 that shows a cross sectional view on the line V-V in Fig. 2, at least one part of the fixed structure arrangement 107 is provided with one sealing element 115 extending along each side of the flexible door section 105. The sealing elements 115 having a lip portion 119 arranged in sealing contact with the flexible door section 105. A flocked section 109 forming part of a sealing portion between the sealing element 115 and the flexible door section 105, wherein the flocked section 109 is attached to the sealing element 115. It is understood that the flocked section 109 as well may be attached to the flexible door section 105 with the same functionality kept. Further, it shall be noted that alternative roller door arrangements 101 may be arranged with only one sealing element 115 extending along one side of the flexible door section 105. The sealing element 115 may in yet an alternative embodiment be attached to the flexible door section 105, wherein the lip portion 119 of the sealing element 115 will be arranged in sealing contact with at least one part of the fixed structure arrangement 107.

[0056] Referring now to Figs. 3a and 6, wherein a sideway sliding door arrangement 201 comprising a plurality of door sections 205, which are hingedly joined together along vertical pivot elements 211. The number of door sections depends on the width of the door opening for which the sideway sliding door arrangement 201 is intended. At each one of the horizontal top side edge and bottom side edge respectively of the door opening, a horizontal guide rail portion 203 extends, even though it is possible to arrange such a sideway sliding door arrangement 201 with only one guide rail 203 arranged at the horizontal top edge. Further, the door sections 205 is connected with and guided by the guide rails 203 via runners 213, which preferably are rollers disposed in

contact with said rails 203, said rollers 213 being mounted on shafts attached to the door sections 205. The guide rail 203 forming part of at least one part of a fixed structure arrangement 207.

[0057] Fig. 3b shows an alternative design of a sideway sliding door arrangement 301 which is provided with one single rigid door section 305. The door section 305 is moved across the door opening when brought between its open position and closed position. As in the case with the sideway sliding door arrangement 201 shown in Fig. 3a, the door arrangement 301 according to Fig. 3b has guide rail portions 303 which extends horizontal at each one of the horizontal top side edge and bottom side edge of the door opening, even though it is possible to arrange such a sideway sliding door arrangement 301 with only one guide rail 303 arranged at the horizontal top edge. The door section is guided by the guide rails 303 via runners 313, which preferably are rollers disposed in said rails 303, said rollers 313 being mounted on shafts attached to the door section.

[0058] An alternative embodiment of the building sliding door arrangement, not shown, may be provided with one single rigid door section to be operated in the vertical direction, wherein the door section is guided by vertically arranged guide rails via runners.

[0059] Referring now to Fig. 6, wherein a cross sectional view on the line VI-VI in Fig. 3a and 3b shows a flocked section 209; 309 that is arranged to form part of a sealing portion between the at least one sliding door section 205; 305 and the building 207; 307. According to one embodiment, the flocked section 209; 309 is attached to a sealing element 215; 315 that is provided between the at least one slidable door section 205; 305 and the building 207; 307, wherein the sealing element 215; 315 is attached to the building 207; 307.

[0060] In accordance with the previous described embodiments of the invention, the flocked section 209; 309 may be provided either on the sealing element 215; 315 or the at least one door section 205; 305 in the case of the sideway slidable door 201; 301. Likewise, the sealing element 215; 315 may be provided on either the at least one slidable door section 205; 315 or the at least one part of the fixed structure arrangement 207; 307, which in the case of the slidable door arrangement 201; 301 is provided as a part of the building or any structure attached to the building.

[0061] Fig. 7 shows an alternative embodiment, with regard to the attachment of the flocked section 409 to the door section 405. The flocked section 409 shown in Fig. 7 is arranged on a belt 433, which is attached between the door section 405 and the at least one part of the fixed structure arrangement 407, wherein the belt 433 extending along the sliding direction of the door arrangement. The belt 433 is preferably attached to the door section 405 by means of attachment points spaced along the edge elongating in the operation direction of the door arrangement, and is consequently loose between these attachment points. In one preferred embodiment according to Fig 7, the belt 433 is attached at the top and the bottom of the door section 405, for instance by means of screwing or riveting.

[0062] The flocked section, in accordance to the abovementioned embodiments, may be provided as a tape device intended to be attached to either the at least one door section or the at least one part of the fixed structure arrangement. In alternative embodiments, the flocked section may be provided in a plurality of ways. For instance, the fiber material forming the flocked section may be provided directly attached to the at least one door section or the at least one part of the fixed structure arrangement, for instance by means of an adhesive. Further, the flocked section may either be arranged as a continues elongating part or arranged as a plurality of spaced parts extending in the operation direction of the sliding door arrangement.

[0063] The sealing element, in accordance to some of the embodiments above, is preferably made of a rubber like material, such as EPDM (Ethylene Propylene Diene Monomer) or TPE (ThermoPlastic Elastomer).

[0064] According to all the abovementioned embodiments, the expression "the at least one part of the fixed structure arrangement" applies to either a part of the building or any structure attached to the building.

[0065] Further, it shall be noted that the method used for the attachment of the sealing element to the building sliding door arrangement is not essential for the invention and may be performed in a plurality of known manners.

[0066] According to all the above mentioned embodiments the expression "flocked section" applies to a portion coated with short cut fibers or fiber flocks.

[0067] Additionally, a person skilled in the art realize that one embodiment may be provided with a flocked section attached to the at least one door section and the at least one part of the fixed structure arrangement respectively.

[0068] It goes without saying that the invention is not limited to the various embodiments described above and shown in the accompanying figures, but that many other variants may still be envisaged.

Claims

1. A building sliding door arrangement (1; 101; 201; 301), which comprises guide rails (3; 103; 203; 303) that are arranged for guiding at least one door section (5; 105; 205; 305; 405) during a movement operation between a closed position and an open position, and vice versa, wherein movement of said at least one door section (5; 105; 205; 305; 405) is relative to at least one part of a fixed structure arrangement (7; 107; 207; 307; 407), wherein said at least one part of the fixed structure arrangement (7; 107; 207; 307; 407) propagates along at least part of the movement operation direction of the at least one

door section (5; 105; 205; 305; 405) when the at least one door section (5; 105; 205; 305; 405) is in its closed position,

characterized in that a flocked section (9; 109; 209; 309; 409) is arranged to form part of a sealing portion between the at least one door section (5; 105; 205; 305; 405) and the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407).

2. Building sliding door arrangement (1; 101; 201; 301) according to claim 1, wherein said flocked section (9; 109; 209; 309; 409) forms part of a sealing portion between at least one lateral edge portion of the at least one door section (5; 105; 205; 305; 405) and the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407), wherein the lateral edge portion propagate along the movement operation direction.

3. Building sliding door arrangement (1; 101; 201; 301) according to claim 1 or 2, wherein the sealing portion between the at least one door section (5; 105; 205; 305; 405) and the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407) is arranged to provide an additional sealing effect in the closed position.

4. Building sliding door arrangement (1; 101; 201; 301) according to any one of the claims above, wherein at least one sealing element (15; 115; 215; 315) is provided to form part of the at least one door section (5; 105; 205; 305; 405) and/or the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407).

5. Building sliding door arrangement (1; 101; 201; 301) according to any one of the claims 1-3, wherein at least one sealing element (15; 115; 215; 315) is attached to the at least one door section (5; 105; 205; 305; 405).

6. Building sliding door arrangement (1; 101; 201; 301) according to any one of the claims 1-3, wherein at least one sealing element (15; 115; 215; 315) is attached to the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407).

7. Building sliding door arrangement (1; 101; 201; 301) according to any one of the claims 4-6, wherein the flocked section (9; 109; 209; 309; 409) is attached to the at least one sealing element (15; 115; 215; 315).

8. Building sliding door arrangement (1; 101; 201; 301) according to any one of the claims 4-7, wherein the at least one sealing element (15; 115; 215; 315) is arranged substantially in a vertical direction.

9. Building sliding door arrangement (1; 101; 201; 301) according to any one of the claims above, wherein the building sliding door arrangement (1; 101; 201; 301) is an overhead door arrangement.

10. Building sliding door arrangement (1; 101; 201; 301) according to any one of the claims 4-9, wherein the sealing element (15; 115; 215; 315) is provided as a lip sealing.

11. Building sliding door arrangement (1; 101; 201; 301) according to any one of the claims above, wherein the flocked section (9; 109; 209; 309; 409) is applied on a carrier structure, which is attached to the building sliding door arrangement(1; 101; 201; 301).

12. Building sliding door arrangement (1; 101; 201; 301) according to claim 11, wherein the carrier structure is a tape device.

13. Building sliding door arrangement (1; 101; 201; 301) according to any one of the claims above, wherein the flocked section (9; 109; 209; 309; 409) comprises at least one of the fiber materials from the group of nylons, polyesters, polyamides, polyacrylonitrile, polyethylene, polypropylen, Nomex®, Aramid, Isovyl®, cotton, wool, vicose rayon, cellulose triacetate, Lyocell®.

14. Building sliding door arrangement (1; 101; 201; 301) according to claim 13, wherein said fiber materials are attached by means of an adhesive in order to obtain the flocked section (9; 109; 209; 309; 409).

15. Use of a sealing portion arranged between at least one door section (5; 105; 205; 305; 405) and at least one part of a fixed structure arrangement for a building sliding door arrangement (1; 101; 201; 301) according to any one of the claims 1-14.

16. Method for arranging a sealing portion between at least one door section (5; 105; 205; 305; 405) and at least one part of a fixed structure arrangement (7; 107; 207; 307; 407) for a building sliding door arrangement (1; 101; 201; 301), which building sliding door arrangement (1; 101; 201; 301) comprises guide rails that are arranged for guiding the at least one door section (5; 105; 205; 305; 405) during a movement operation between a closed position and an open position, and vice versa, wherein movement of said at least one door section (5; 105; 205; 305; 405) is relative to the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407), wherein said at least one part of the fixed structure arrangement (7; 107; 207; 307; 407) propagates along at least part of the movement operation direc-

tion of the at least one door section (5; 105; 205; 305; 405) when the at least one door section (5; 105; 205; 305; 405) is in its closed position, wherein the method comprising the steps of:

arranging and
attaching a flocked section (9; 109; 209; 309; 409) to form part of the sealing portion between the at least one door section (5; 105; 205; 305; 405) and the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407).

17. Method according to claim 16 further comprising, arranging said flocked section (9; 109; 209; 309; 409) to form part of a sealing portion between at least one lateral edge portion of the at least one door section (5; 105; 205; 305; 405) and the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407), wherein the lateral edge portion propagate along the movement operation direction.

18. Method according to any one of claims 16-17 further comprising, arranging the flocked section (9; 109; 209; 309; 409) between the at least one door section (5; 105; 205; 305; 405) and the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407), in order to obtain an additional sealing effect in the closed position.

19. Method according to any one of claims 16-18 further comprising, arranging the flocked section (9; 109; 209; 309; 409) on the at least one door section (5; 105; 205; 305; 405) and/or the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407).

20. Method according to any one of claims 16-19 further comprising, arranging the flocked section (9; 109; 209; 309; 409) on at least one sealing element (15; 115; 215; 315) which is provided to form part of the at least one door section (5; 105; 205; 305; 405) and/or the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407).

21. Method according to any one of claims 16-20 further comprising an initial step of, removing a sealing of any kind attached to the building sliding door arrangement (1; 101; 201; 301) between the at least one door section (5; 105; 205; 305; 405) and the at least one part of the fixed structure arrangement (7; 107; 207; 307; 407) for purpose of sealing replacement.

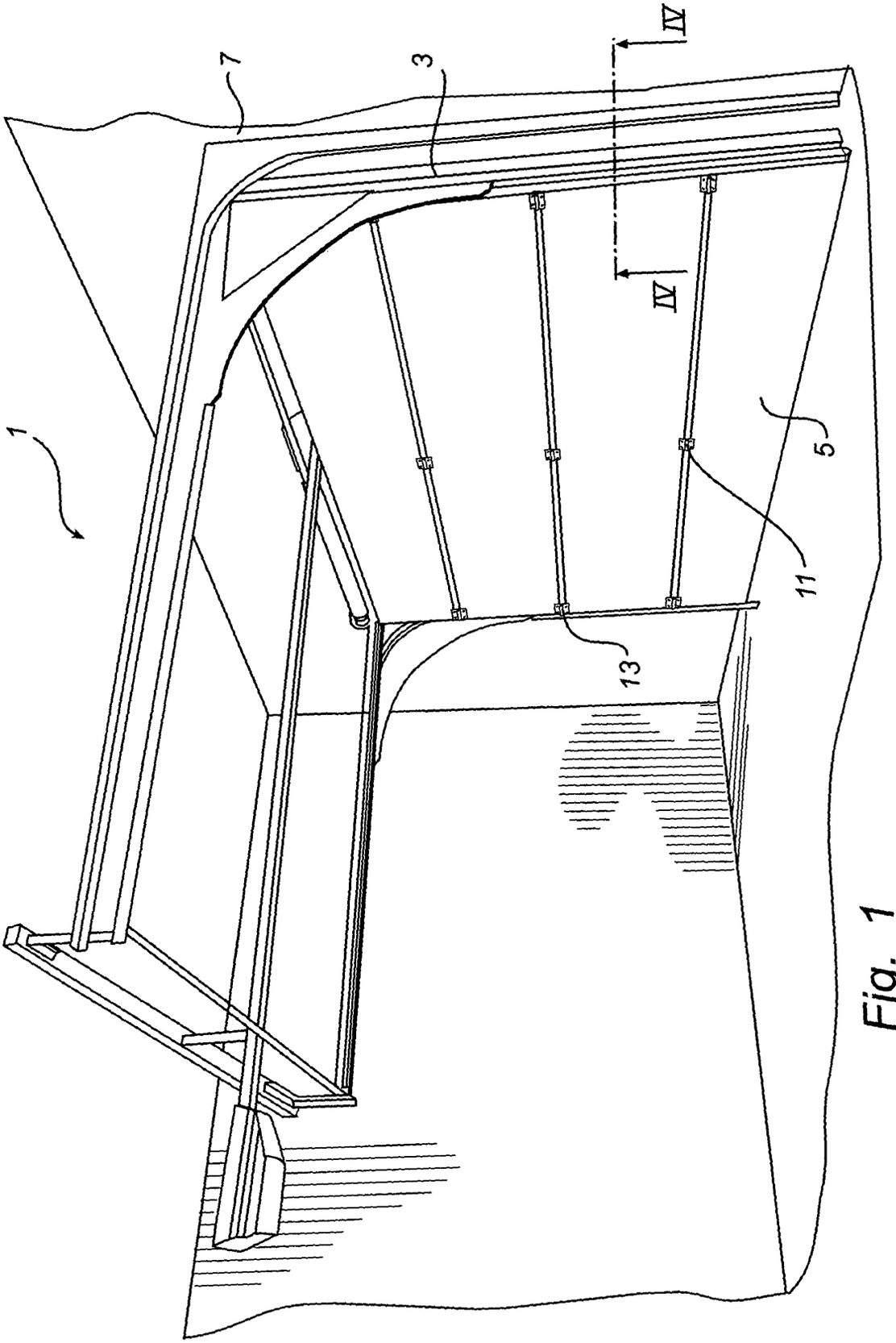

Fig. 1

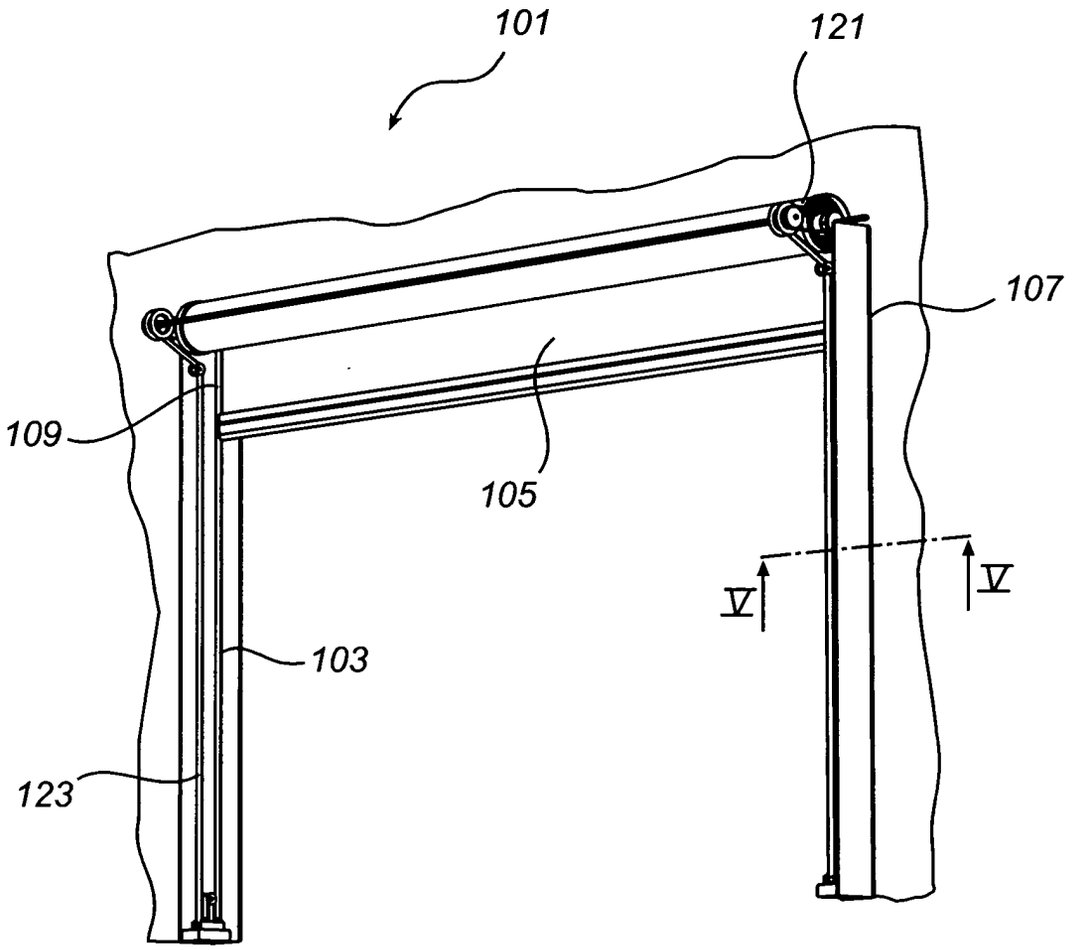

Fig. 2

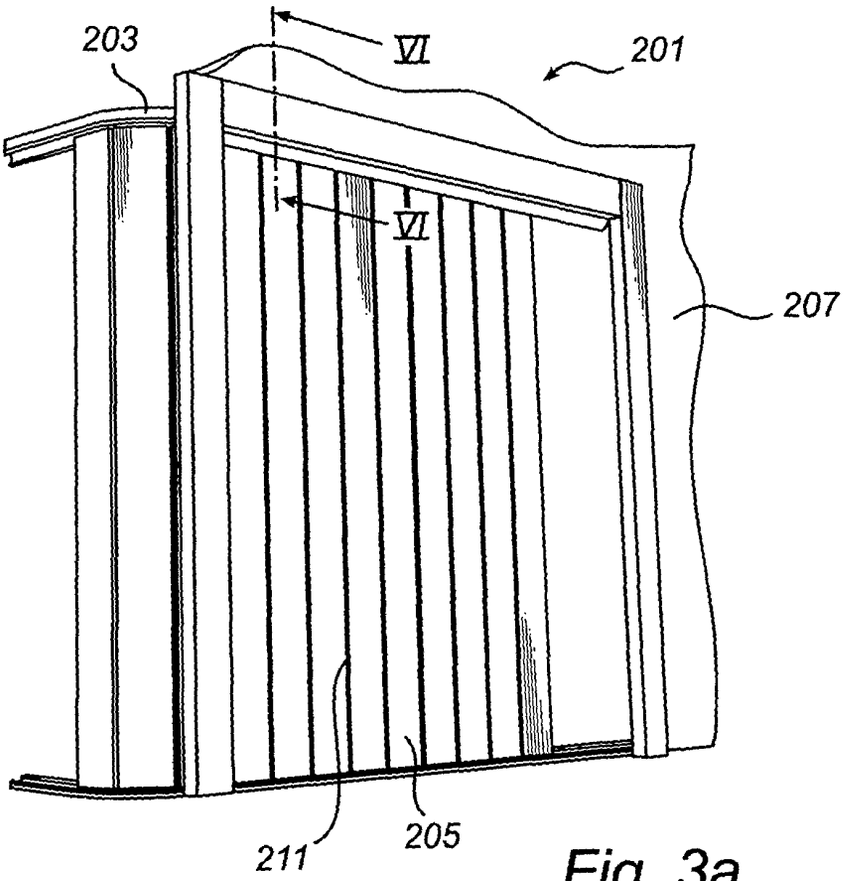

Fig. 3a

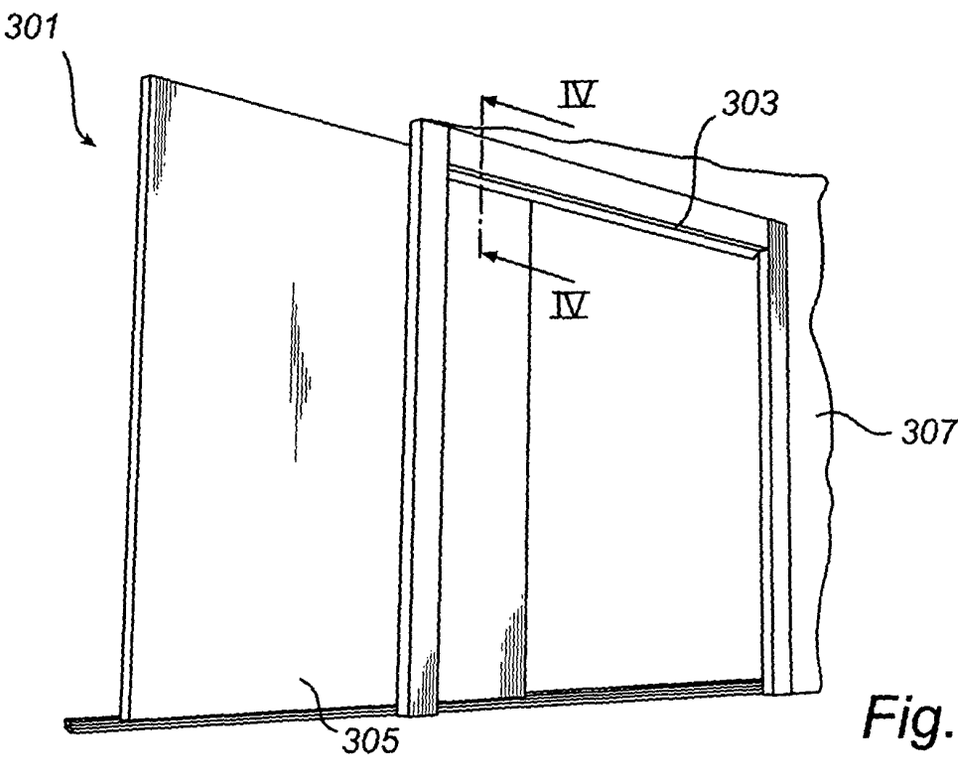

Fig. 3b

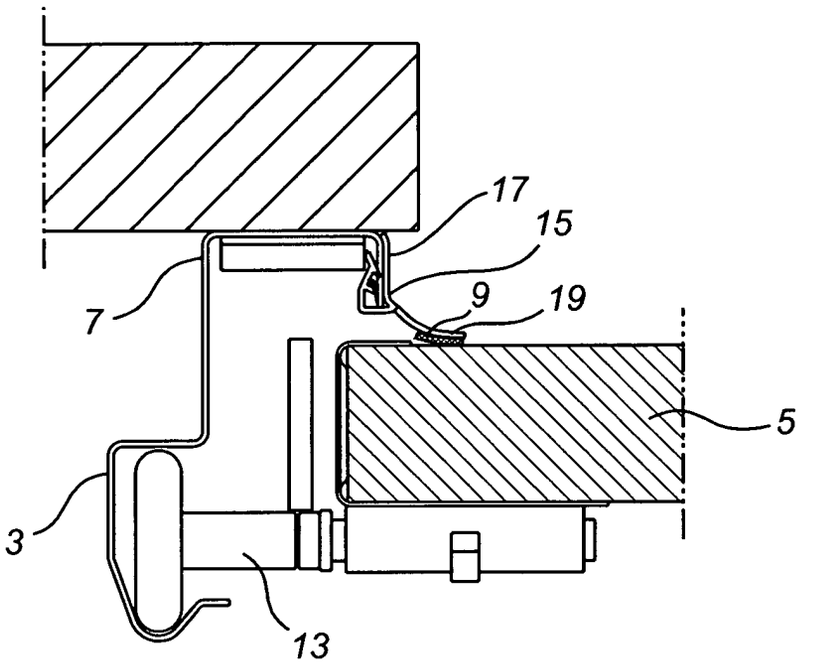

Fig. 4a

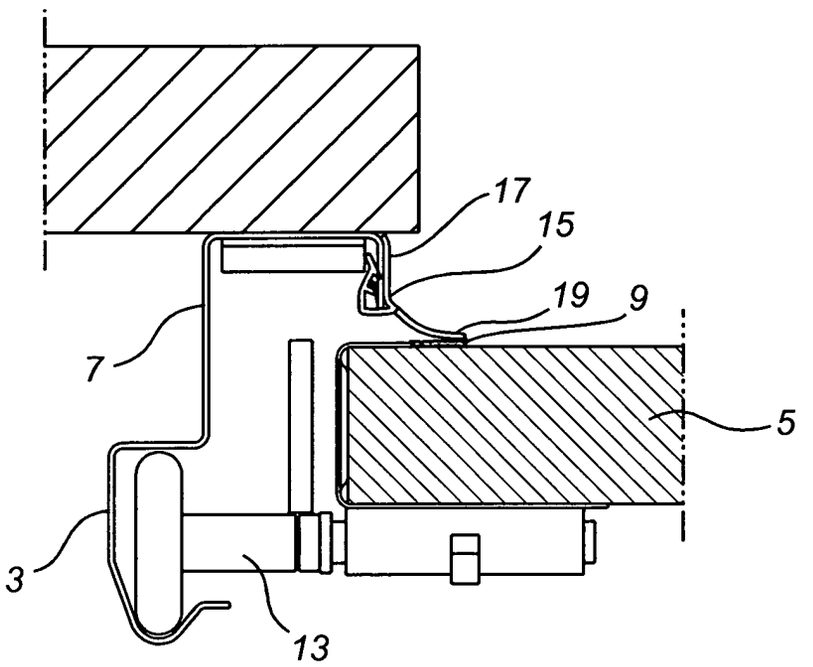

Fig. 4b

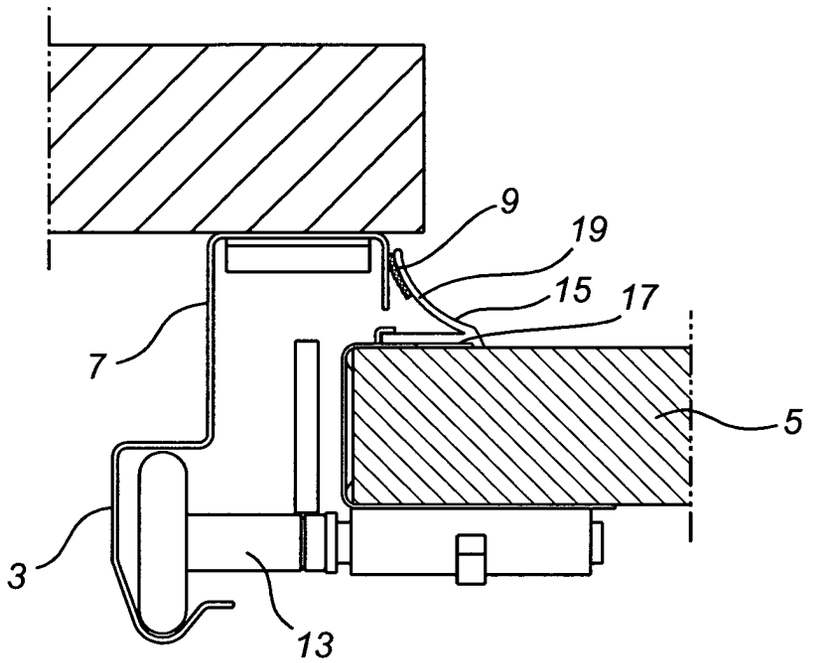

Fig. 4c

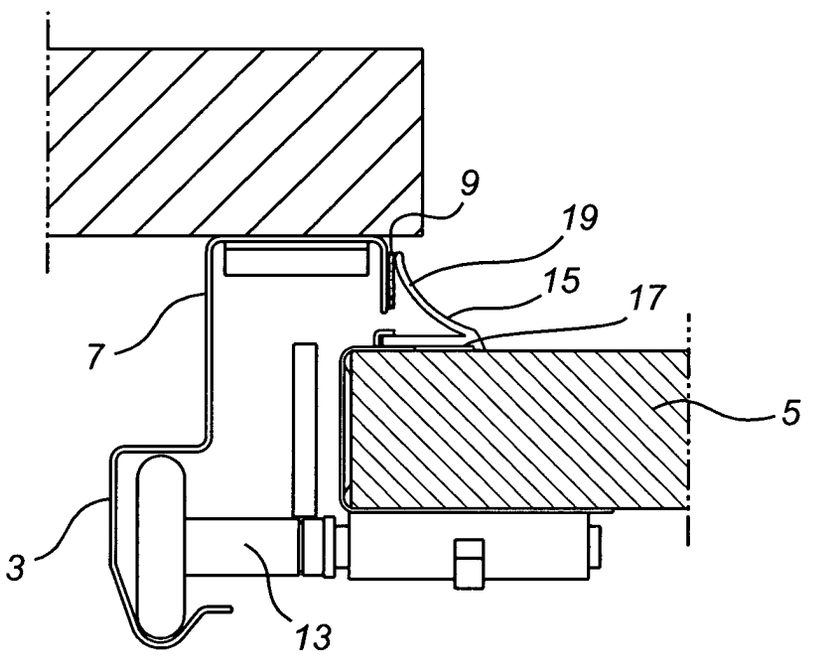

Fig. 4d

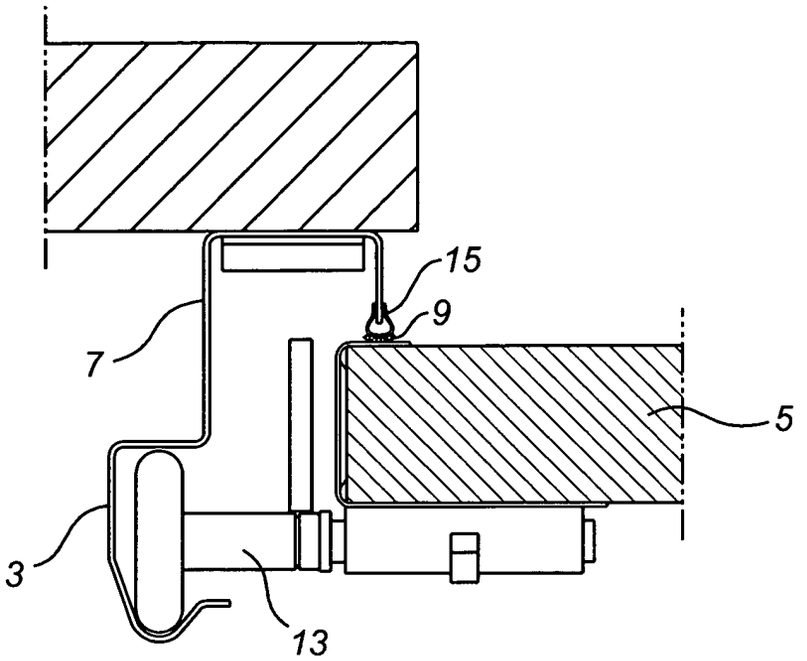

Fig. 4e

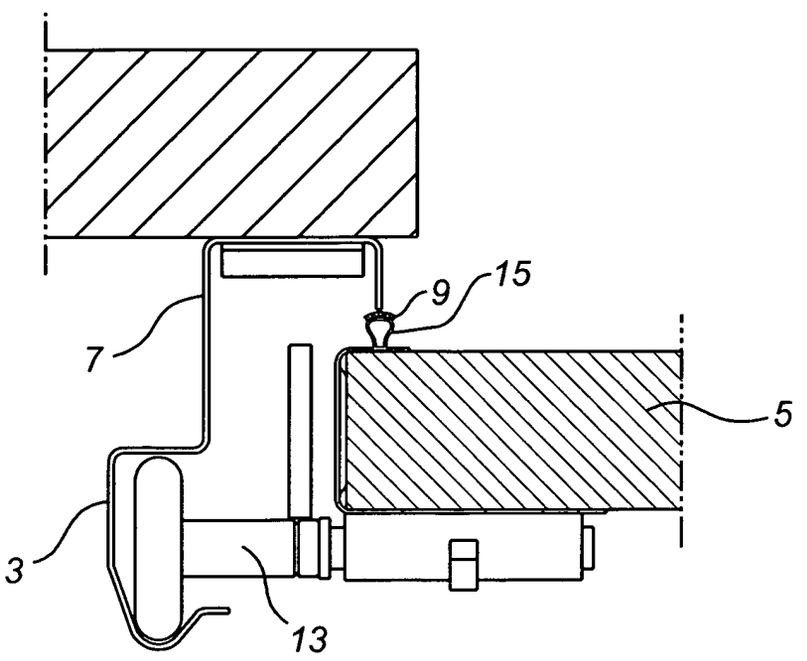

Fig. 4f

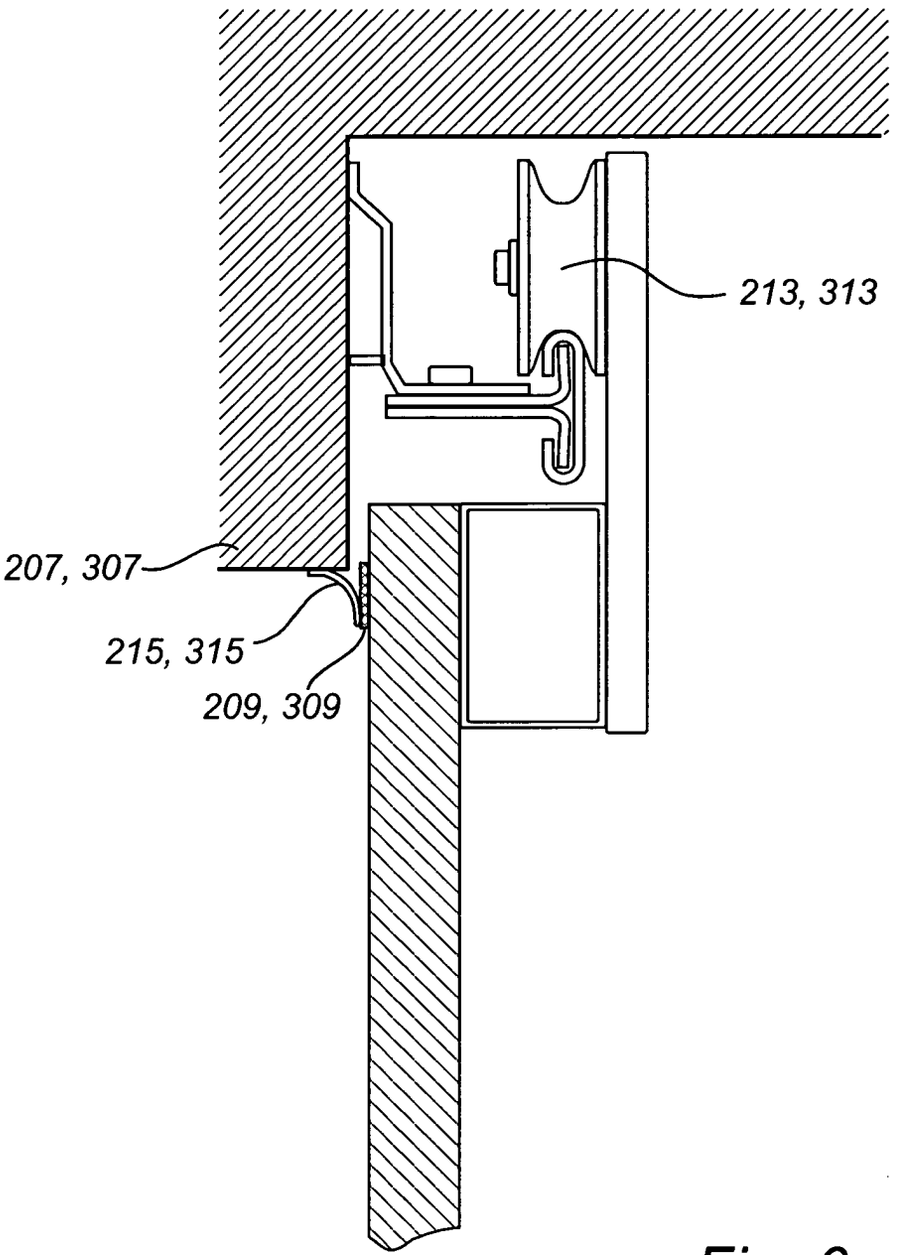

Fig. 6

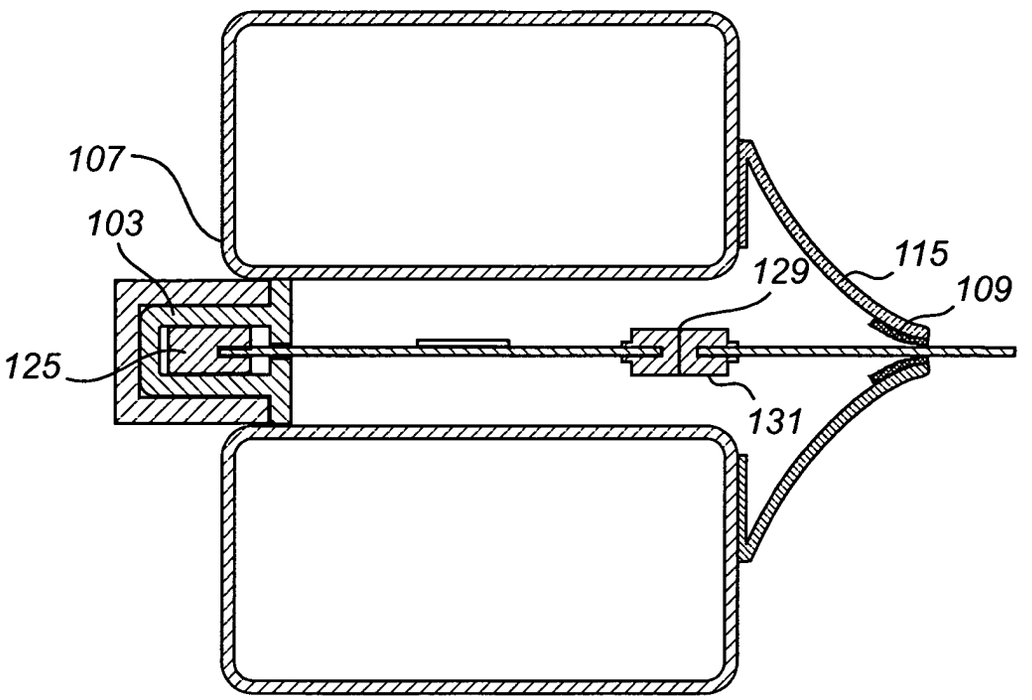

Fig. 5

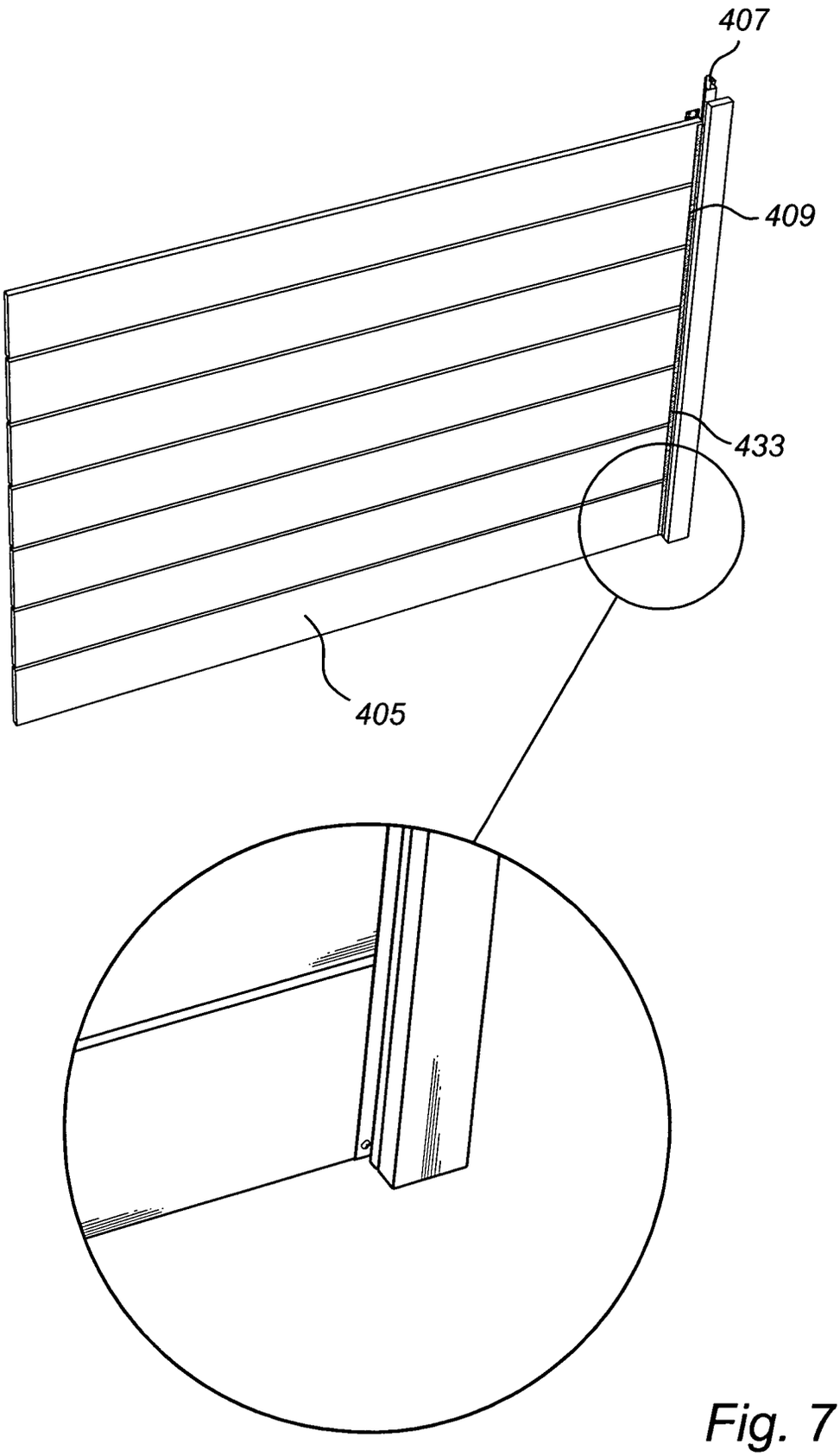

Fig. 7

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 00 5730

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X Y	US 3 535 824 A (KESSLER GERALD) 27 October 1970 (1970-10-27) * column 1, line 23 - line 71 * * column 2, line 49 - line 61 * -----	1-4,6-8, 10,13-20 5,9,11, 12	E06B7/23 E05D15/16
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Y	WO 96/02725 A (HOERMANN KG) 1 February 1996 (1996-02-01) * abstract; figures * -----	9	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E05D
E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	3 August 2004	Witasse-Moreau, C

CATEGORY OF CITED DOCUMENTS

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82