(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 194 632 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
19.02.2025 Bulletin 2025/08

(21) Application number: **21425061.5**

(22) Date of filing: **07.12.2021**

(51) International Patent Classification (IPC):
E04B 2/74 *(2006.01)* ***E04H 9/02*** *(2006.01)*
E04B 2/82 *(2006.01)* ***E06B 3/54*** *(2006.01)*
E06B 1/00 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
E04B 2/745; E04B 2/7401; E04B 2/825; E06B 3/54;
E04B 2002/7492

(54) **CONTROLLED DEFORMABILITY PARTITION WALL WITH VIBRATION-INDUCED ENERGY DISSIPATION**

TRENNWAND MIT KONTROLLIERTER VERFORMBARKEIT MIT SCHWINGUNGSINDUZIERTER ENERGIEDISSIPATION

PAROI DE SÉPARATION À DÉFORMABILITÉ CONTRÔLÉE AVEC DISSIPATION D'ÉNERGIE INDUITE PAR LES VIBRATIONS

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

(43) Date of publication of application:
14.06.2023 Bulletin 2023/24

(73) Proprietors:
- **Università degli Studi di Camerino**
  62032 Camerino (MC) (IT)
- **Università degli Studi della Basilicata**
  85100 Potenza (PZ) (IT)
- **Styloffice S.p.A.**
  66010 Miglianico (CH) (IT)

(72) Inventors:
- **Pietroni, Lucia**
  00184 Roma (RM) (IT)
- **Dall'Asta, Andrea**
  60131 Ancona (AN) (IT)
- **Leoni, Graziano**
  60035 Jesi (AN) (IT)
- **Zona, Alessandro**
  65123 Pescara (PE) (IT)
- **Mascitti, Jacopo**
  63100 Ascoli Piceno (AP) (IT)
- **Di Stefano, Alessandro**
  97019 Vittoria (RG) (IT)
- **Galloppo, Daniele**
  64010 Colonnella (TE) (IT)
- **Paciotti, Davide**
  62019 Recanati (MC) (IT)
- **Gioiella, Laura**
  60121 Ancona (AN) (IT)
- **Scozzese, Fabrizio**
  65121 Pescara (PE) (IT)
- **Morici, Michele**
  60041 Sassoferrato (AN) (IT)
- **Micozzi, Fabio**
  62100 Macerata (MC) (IT)
- **Ponzo, Felice Carlo**
  85110 Potenza (IT)
- **Nigro, Domenico Salvatore**
  85010 Pietrapertosa (PZ) (IT)
- **Mossucca, Antonello**
  85025 Melfi (PZ) (IT)
- **Ditommaso, Rocco**
  85029 Venosa (PZ) (IT)
- **Di Cesare, Antonio**
  85025 Melfi (PZ) (IT)
- **NigroVico, Antonella**
  85010 Pietrapertosa (PZ) (IT)
- **Auletta, Gianluca**
  85042 Lagonegro (PZ) (IT)
- **Tancredi, Giacomo**
  85100 Potenza (IT)
- **Taraborrelli, Raimondo**
  66023 Francavilla al Mare (CH) (IT)

(74) Representative: **Picarelli, Gennaro**
Via Monte San Michele, 15
Ancona 60124 (IT)

Processed by Luminess, 75001 PARIS (FR)

(Cont. next page)

(56) References cited:
WO-A1-2004/093998
WO-A1-2011/048559
WO-A1-2014/183608
DE-A1- 102009 044 421
JP-A- 2006 316 471
KR-A- 20210 003 617

Description

[0001] The present invention relates to a partition wall for internal rooms available for residential or industrial buildings. The purpose of the invention is to dissipate the energy induced by vibratory events.

[0002] The invention relates to a wall with a metal frame and panels, it is preferably made of glass, and it has devices enabling the dissipation of energy induced by natural or unnatural events, such as seismic events, explosions, vibrations from operating machines, etc.; its characteristics are able to contain the collapse and overturning of said wall, which is therefore suitable to be used as a life-saving partition wall.

[0003] On the topic of seismic events, over time, it has been highlighted the poor capacity of most existing buildings to withstand seismic stress, with the only exception of latest buildings, which fulfil the construction criteria, and also situations caused by ground's vibrations due to the action of operating machinery, explosions due to demolition, etc.

[0004] During an earthquake, the building must be able to withstand seismic events, as well as keeping internal or external walls from detaching or tipping over; in the event of this occurrence, the outcome would be a partial or total damage of the building as well as personal injuries.

[0005] In order to improve the response of the building to dynamic vibrations, whether it is a new or renovated building, it is necessary to ensure that non-structural elements (such as masonry partitions and curtain walls, etc.) do not impede the strength of the load-bearing structure by modifying its freedom of movement. It is necessary that non-structural elements do not modify the behaviour of the building's structure and provide help to some extent to the improvement of the resistance to dynamic stress. Therefore, the characteristics of room dividers must be able to absorb and dissipate the vibration energy generated during an event, such as an earthquake, either through appropriate connections to the masonry, in order to improve the overall behaviour of the building to dynamic stress, or otherwise by allowing these dividing elements to be subject to controlled deformation and dissipating the energy within them.

[0006] For example, during an earthquake, the dynamic actions are developed on the structures and the reactions of non-structural elements create a system of forces with bending and shear stresses working on the plane of these elements.

[0007] In this respect, for this purpose the partition element must be able to withstand these stresses and dissipate the vibration energy released, as far as possible.

[0008] The partition wall, which is the main object of the present invention, is made by a panel 9 preferably of glass, and it is placed in a perimetral frame, which is made of metallic material and by particular elements placed between the panel and the frame, having the function of dissipating vibration energy and also allow the low friction sliding of the panel in relation with the frame.

[0009] The state of the art provides energy dissipating solutions linked to seismic-resistant elements, as can be seen in some of the patents below, these elements are made of masonry or polymeric composite materials or wood. The document US9238919B2 describes a seismic insulation system, which has an insulation device linked to the edge of a superstructure placed in a vertical direction. There is also an energy sink, which is linked to the superstructure placed in a horizontal direction. An additional energy sink is provided to reduce the vibration of the superstructure related to the ground, thanks to its expansion or contraction in a horizontal direction.

[0010] The document WO2014147598A2 describes an anti-seismic device, which has a sliding outline characterised by a groove or a glide. A skid is engaged longitudinally with the glide or groove and it is fastened to a beam. There is also a deformable element with elastoplastic characteristics, which is rigidly connected to the skid with a deformable support as a result of movement along the glide.

[0011] Document CNI04389355A describes a dissipative seismic system with a housing connected to an energy sink. One end of the housing is fixed with a slideway which is integral with the end part of a fitting. The housing is connected with a skid which is provided with a rib, wherein the end of the housing is linked with a shape memory alloy wire connected with a pre-stress element. These anti-seismic devices, like others proposed, have application challenges, indeed, they are made up with a number of components that require a pre-assembly, moreover they are not cheap and they are bulky, because they have been designed for masonry wall thicknesses, so it is not easy to adapt them in the events of renovations, which requires invasive interventions. The application of such devices requires high costs and substantial changes to the built environment. Moreover, the documents reported herein only concern the dissipative device applicable to traditional masonry or wooden building elements and cannot be used in the context of the solution proposed herein due to the lack of space, cost and difficulty of application.

[0012] We mention other documents such as WO 2004/09398 A1 and WO 2011/048559 A1 which constitute technical background. One of the main purposes of the present invention is to realize a partition wall system with panels, preferably made of glass, with a particularly feature, it has the capacity to dissipate the energy induced by vibratory phenomena such as an earthquake and without risk of collapsing, it can guarantee the safety of those nearby thanks to the absence of blunt objects produced by said wall.

[0013] Another purpose of the present invention is a partition wall with panels, preferably made of glass, which are easy to install, and also easy to build, keeping low production costs.

[0014] Another consequential purpose of the present invention is to obtain a partition wall with controlled

deformability, which is able to absorb and dissipate the energy generated by a vibratory phenomenon such as a seismic event or else, it positively works together with the structure to which it is bound.

[0015] The invention is defined by the features of the appended claims.

[0016] According to the invention, this purpose is achieved by the combination of a metal frame surrounding one or more panels, preferably made of glass, and one or more elements with the energy dissipation capacity which are placed between said frame and said panels. The elements have the capacity of absorbing vibration energy, from now on "PAD" 1, they have a shape, size and properties such as to enable vibration insulation of the mass of the preferably glass panels from the surrounding frame. Thus, there is a coupling between the panels and the frame, so the panels are able to move within certain limits and with respect to the frame, which is integral with the structure, and under the effect of vibrations. In other words, there is a coupling between the panels and the frame, this couple is able to dissipate the energy by the power of the properties of the PAD 1 connection elements, since there is no perfectly rigid connection, just as there is no perfectly elastic connection between the panels and the frame, but there is a connection with vibration damping, which is permitted by the viscoelastic properties of the elastomer or elastomers, and by which the PAD 1 are made. Exploiting the concept of energy dissipation, it is possible to pursue safety without increasing the stiffness and/or resistance of the wall components, thus the dimensions of the structural profiles can be limited and consequently it is possible to avoid the insertion of bracing and reinforcement elements in the blind areas of the wall.

[0017] The present invention introduces the innovative element of partition walls with panels, preferably made of glass, and with a controlled deformability, also capable of dissipating vibration energy.

[0018] Regarding the partition walls, with panels made of glass or other typical construction material, the characteristic of the present invention is represented by the controlled deformability and dissipation of the vibration energy, indeed it is referred to the "PAD" elements 1, which are made of viscoelastic elastomeric material, to the adjustable skids 2 and to the fixed skids 3, both are made of low friction material, they support and guide the said panel 9, and they allows the PADs 1 to be activated in a horizontal direction under the action of the induced stresses and to perform the energy dissipation function.

[0019] With reference to the figures shown, please find below the description of the object of the present invention in detail:

- Fig.1 represents the section of the partition wall in relation with the elements characterising the dissipative and anti-tilting properties.
- Fig.2 represents an axonometric detail projection of the frame section fixed to the floor.
- Fig.3 represents an axonometric detail projection of the frame section fixed to the ceiling.

[0020] The graphical representation shown in the figures below have the only purpose of simplifying the understanding of the description, but they are not binding in terms of shape or dimensions.

[0021] The abovementioned partition wall with panels, preferably made of glass, which is the object of the present invention, have a metal frame made with profiled elements, within which the elements characterizing the invention are placed.

[0022] The metal profile 4 in the composition of two horizontal segments and two vertical segments defines the base frame that surrounds and contains one or more panels preferably made of glass 9.

[0023] The horizontal segment of the frame on the ceiling, said profile 4, is located inside an integral C profile 5 with the ceiling, and it houses one or more skids 3, equally spaced and with a suitable length, and they are made with anti-friction or low friction coefficient material related with the material used for the profiles. The abovementioned C profile 5 together with said skid 3 acts together as sliding guide of said profile 4, they provide the frame of said partition wall with anti-tilting properties under the dynamic actions produced by a vibration phenomenon, thus allowing only the horizontal movement on the plane of the abovementioned wall. Inside the mentioned profile 4, on the ceiling side, the arms 7 are located in a sliding cylindrical coupling, in number of one or more pairs; the arms are put accordingly to house the elements 6 which are involved in the transversal control of said panel, preferably glass made 9.

[0024] Based on the configuration requirements, the abovementioned control elements 6 may operate as panel locking or as sliding containment. Once positioned, the mentioned arms 7 are locked to the frame with a screw fixing.

[0025] The horizontal segment of the floor-side frame, said profile 4, is rigidly fixed to the floor, it keeps inside one or more pairs of the said sliding cylindrical coupling arms 7; each pair of said arms 7 is able to support one pair of said PAD 1 and, once positioned, are fixed to the frame with screws. The said PAD 1 are combined with the said arms 7 and with the mentioned panel, which is preferably glass made 9, through a rigid chemical coupling that cannot be disassembled (glues or adhesives etc. are used in this case), otherwise if it is a mechanical coupling the parts can be disassembled (use of co-moulded metal inserts to fix with screws, etc.). In this case the joined components are integral. The possibility of being able to choose the number of couples of said PAD 1, which are located within the configuration of said partition wall, makes it adaptable to the needs of energy dissipation; for instance, it is useful for the classification of the seismic zone where the said wall is used, and it is also functional for the relative position of said wall with respect to the direction of propagation of the seismic stresses, lastly it

defines the controlled deformability according to the needs.

[0026] Based on the floor configuration, the abovementioned profile 4 houses a height-adjustable and longitudinally sliding skid 2, it is necessary for the alignment of the panels. The abovementioned skid 2, which is made of a material with a low friction coefficient, allows the proper setting of said panels, which are preferably glass made 9; the skid 2 allows the panels to slide horizontally, so it activates the said PAD 1, which is responsible for the dissipation of the vibration energy. The uprights of the wall frame also have the said profile 4 with one or more pairs of the abovementioned arms 7, which are housed inside jointly with one or more pairs of said containment elements 6, and with the functions previously described.

[0027] A pair of covers 8 for each said profile 4 allow the protection of the internal components of the frame and guarantee an aesthetic value.

[0028] The mentioned partition wall, which panels are preferably glass made, is subjected to seismic stress tests simulated in the laboratory, this test has demonstrated the goodness of the invention, and thus it has fulfilled the expectations.

Claims

1. Controlled deformability partition wall comprising the following features:

   - a frame defined by several metallic profiles (4) as floor profiles and as ceiling profiles which are suitable to host inside itself arms (7), which are connected to the said profiles (4) with cylindrical sliding coupling and panels preferably made of glass (9),
   - a plurality of pairs of abovementioned arms (7) with a sliding cylindrical coupling to said metal profiles (4), which are suitable to support PADs (1) and containment elements (6),
   - a plurality of said viscoelastic elastomer PADs (1) arranged on said metal profile (4), preferably on the floor, which are suitable to interact with said glass panels (9) to dissipate vibration energy,
   - a plurality of containment elements (6) arranged on the metal profile (4), preferably at the ceiling and on the uprights, suitable for containing transversal displacements of said preferably glass panels (9),
   - a plurality of height-adjustable skids (2) made with a low friction coefficient material, which is placed inside said horizontal floor profile (4), enable the levelling and the longitudinal sliding of the said panel, which are preferably glass made (9), and
   - a plurality of sliding skids (3), which are placed within the abovementioned horizontal metal profile (4) at the ceiling and fixed together with said metal C-profile (5) at the ceiling, are suitable to allow the longitudinal sliding and to avoid the transversal displacement of the mentioned metal profile (4) preventing the overturning of the partition wall, with panels preferably glass made (9), when they work under the dynamic actions of a vibratory phenomenon.

2. Controlled deformability partition wall according to claim 1 wherein the mentioned PAD (1) is made of a composition of one or more viscoelastic elastomeric resins in combination with embedded natural fibres or fibre fabrics placed between the elastomer layers in order to better characterise the energy dissipation response under vibration events.

3. Controlled deformability partition wall according to claim 1 wherein said PADs (1) are integral with the abovementioned arms (7) and with said panel, preferably in glass (9), they are connected through the interposition of adhesive films, double-sided adhesive films, chemical adhesives, co-moulding on metal inserts in order to achieve fixed or removable couplings.

4. Controlled deformability partition wall according to claim 1 wherein said height-adjustable skids (2) are made with low friction coefficient polymeric resins; alternatively, they might have at least on their sliding surfaces the coating of a layer of low friction coefficient material; they level off the mentioned panels, which are preferably glass made (9).

5. Controlled deformability partition wall according to claim 1 wherein said fixed skids (3) are able to limit the wall from tilting, the skids are also integral with a metal profile (5), which is fixed to the ceiling; they are made of polymeric resins with low friction coefficient in order to allow the sliding of said metal profile (4) longitudinally but not transversally, and it is guided by said fixed skids (3).

6. Controlled deformability partition wall according to claim 1 wherein the abovementioned arms (7) are coupled with the said metallic profile (4) and arranged to be blocked to said metallic profile (4) through a screw fixing, preventing from slide along the cylindrical coupling.

7. Controlled deformability partition wall according to claim 1 wherein said containment elements (6) allow you to place the abovementioned panel, preferably in glass (9), laterally with the sliding or locked coupling, thus it reduces the entity of out-of-plane bending of said panel, which is preferably glass made too (9).

Patentansprüche

1. Trennwand mit kontrollierter Verformbarkeit, die folgenden Merkmale umfassend:

   - einen Rahmen, definiert durch mehrere metallische Profile (4) wie Bodenprofile und Deckenprofile, die dazu geeignet sind, in sich Arme (7) aufzunehmen, die mit den Profilen (4) verbunden sind, mit einer zylindrischen Gleitkupplung und vorzugsweise aus Glas gefertigten Platten (9),
   - mehrere Paare der erwähnten Arme (7) mit einer zylindrischen Gleitkupplung zu den Metallprofilen (4), die geeignet sind zum Stützen von Blöcken (1) und Fassungselementen (6),
   - mehrere viskoelastische Elastomerblöcke (1), angeordnet an dem Metallprofil (4), vorzugsweise am Boden, die geeignet sind, um mit den Glasplatten (9) zu interagieren, um Schwingungsenergie zu dissipieren,
   - mehrere Fassungselemente (6), angeordnet am Metallprofil (4), vorzugsweise an der Decke und an den Pfosten, geeignet zum Eingrenzen von transversalen Versetzungen der vorzugsweise aus Glas bestehenden Platten (9),
   - mehrere höhenverstellbare Schienen (2), gefertigt aus einem Material mit niedrigem Reibungskoeffizienten, die innerhalb des horizontalen Bodenprofils (4) platziert sind und das Nivellieren und das Längsgleiten der vorzugsweise aus Glas gefertigten Platte (9) ermöglichen, und
   - mehrere Gleitschienen (3), die innerhalb des erwähnten horizontalen Metallprofils (4) an der Decke platziert sind und zusammen mit dem C-Metallprofil (5) an der Decke befestigt sind, die dazu geeignet sind, das Längsgleiten zu ermöglichen und die transversale Versetzung des erwähnten Metallprofils (4) zu vermeiden, so ein Umkippen der Trennwand mit vorzugsweise aus Glas gefertigten Platten (9) verhindernd, wenn diese unter den dynamischen Wirkungen eines Schwingungsphänomens arbeiten.

2. Trennwand mit kontrollierter Verformbarkeit nach Anspruch 1, wobei der erwähnte Block (1) aus einer Zusammensetzung aus einem oder mehreren viskoelastischen elastomeren Harzen in Kombination mit eingebetteten Naturfasern oder zwischen den elastomeren Schichten platzierten Faserstoffen gefertigt ist, um die Energiedissipationsantwort bei Schwingungsereignissen besser zu charakterisieren.

3. Trennwand mit kontrollierter Verformbarkeit nach Anspruch 1, wobei die Blöcke (1) integral mit den erwähnten Armen (7) und mit der vorzugsweise aus Glas bestehenden Platte (9) ausgebildet sind, wobei diese durch die Einfügung von Klebefolien, doppelseitigen Klebefolien, chemischen Klebstoffen, gemeinsames Formen auf Metalleinsätzen verbunden sind, um feste oder abnehmbare Kupplungen zu erreichen.

4. Trennwand mit kontrollierter Verformbarkeit nach Anspruch 1, wobei die höhenverstellbaren Schienen (2) aus polymeren Harzen mit niedrigem Reibungskoeffizienten gefertigt sind; wobei sie alternativ zumindest auf ihren Gleitoberflächen die Beschichtung einer Schicht aus Material mit niedrigem Reibungskoeffizienten aufweisen können, die die erwähnten, vorzugsweise aus Glas gefertigten Platten (9) ausgleichen.

5. Trennwand mit kontrollierter Verformbarkeit nach Anspruch 1, wobei die festen Schienen (3) in der Lage sind, die Wand zu begrenzen, um nicht zu kippen, wobei die Schienen außerdem integral mit einem Metallprofil (5) ausgebildet sind, das an der Decke befestigt ist; wobei sie aus polymeren Harzen mit niedrigem Reibungskoeffizienten gefertigt sind, um Gleiten des Metallprofils (4) in Längsrichtung, aber nicht in Querrichtung, zu ermöglichen, und wobei es durch die festen Schienen (3) geführt wird.

6. Trennwand mit kontrollierter Verformbarkeit nach Anspruch 1, wobei die oben erwähnten Arme (7) mit dem metallischen Profil (4) gekoppelt sind und angeordnet sind, um durch eine Schraubbefestigung an dem metallischen Profil (4) geblockt zu werden, ein Gleiten entlang der zylindrischen Kupplung verhindernd.

7. Trennwand mit kontrollierter Verformbarkeit nach Anspruch 1, wobei die Fassungselemente (6) ermöglichen, die erwähnte, vorzugsweise aus Glas bestehende Platte (9), lateral mit der gleitenden oder geblockten Kupplung zu platzieren, so die Gesamtheit des Aus-der-Ebene-Biegens der ebenfalls vorzugsweise aus Glas gefertigten Platte (9) verringernd.

Revendications

1. Paroi de séparation à déformabilité contrôlée comprenant les éléments suivants :

   - un cadre défini par plusieurs profilés (4) métalliques en tant que profilés de sol et en tant que profilés de plafond qui sont appropriés pour héberger à l'intérieur de lui-même des bras (7), qui sont raccordés auxdits profilés (4) avec un couplage coulissant cylindrique et des panneaux préférablement fait de verre (9),

- une pluralité de paires de bras (7) susmentionnés avec un couplage cylindrique coulissant auxdits profilés (4) de métal, qui sont appropriés pour supporter des PAD (1) et des organes de retenue (6),
- une pluralité desdits PAD élastomères viscoélastiques (1) agencés sur ledit profilé (4) de métal, préférablement sur le sol, qui sont appropriés pour interagir avec lesdits panneaux de verre (9) afin de dissiper l'énergie des vibrations,
- une pluralité d'organes de retenue (6) agencés sur le profilé (4) de métal, préférablement au niveau du plafond et sur les montants, appropriés pour retenir des déplacements transversaux desdits panneaux préférablement de verre (9),
- une pluralité de patins (2) réglables en hauteur faits d'un matériau à faible coefficient de frottement, qui est placé à l'intérieur dudit profilé (4) de plancher horizontal, autorisent le nivellement et le coulissement longitudinal dudit panneau, qui sont de préférence faits de verre (9), et
- une pluralité de patins (3) coulissants, qui sont placés à l'intérieur du profilé (4) de métal horizontal susmentionné au niveau du plafond et fixés ensemble avec ledit profilé (5) de métal en C au niveau du plafond, sont appropriés pour permettre le coulissement longitudinal et pour éviter le déplacement transversal du profilé (4) de métal mentionné empêchant le retournement de la paroi de séparation, avec des panneaux préférablement faits de verre (9), lorsqu'ils fonctionnent sous les actions dynamiques d'un phénomène vibratoire.

2. Paroi de séparation à déformabilité contrôlée selon la revendication 1 dans laquelle le PAD (1) mentionné est fait d'une composition d'une ou de plusieurs résines élastomères viscoélastiques en combinaison avec des fibres naturelles ou des tissus de fibres incorporés placés entre les couches élastomères afin de mieux caractériser la réponse de dissipation d'énergie sous des événements de vibrations.

3. Paroi de séparation à déformabilité contrôlée selon la revendication 1 dans laquelle lesdits PAD (1) sont solidaires des bras (7) susmentionnés et dudit panneau, préférablement de verre (9), ils sont raccordés par le biais d'une interposition de films adhésifs, de films adhésifs double face, d'adhésifs chimiques, de co-moulage sur des inserts de métal afin d'obtenir des couplages fixes ou amovibles.

4. Paroi de séparation à déformabilité contrôlée selon la revendication 1 dans laquelle lesdits patins (2) réglables en hauteur sont faits de résines polymères à faible coefficient de frottement ; comme variante, ils pourraient avoir au moins sur leurs surfaces coulissantes le revêtement d'une couche de matériau à faible coefficient de frottement ; ils nivellent les panneaux mentionnés, qui sont préférablement faits de verre (9).

5. Paroi de séparation à déformabilité contrôlée selon la revendication 1 dans laquelle lesdits patins (3) fixes sont aptes à limiter le basculement de la paroi, les patins sont également solidaires d'un profilé (5) de métal, qui est fixé au plafond ; ils sont faits de résines polymères à faible coefficient de frottement afin de permettre le coulissement dudit profilé (4) de métal de manière longitudinale mais non transversale, et il est guidé par lesdits patins (3) fixes.

6. Paroi de séparation à déformabilité contrôlée selon la revendication 1 dans laquelle les bras (7) susmentionnés sont couplés audit profilé (4) métallique et agencés pour être bloqués sur ledit profilé (4) métallique par le biais d'une fixation à vis, empêchant un coulissement le long du couplage cylindrique.

7. Paroi de séparation à déformabilité contrôlée selon la revendication 1 dans laquelle lesdits éléments de retenue (6) vous permettent de placer le panneau susmentionné, préférablement de verre (9), latéralement avec le couplage coulissant ou verrouillé, ainsi cela réduit la flexion hors plan de l'entité dudit panneau, qui est préférablement fait de verre (9) également.

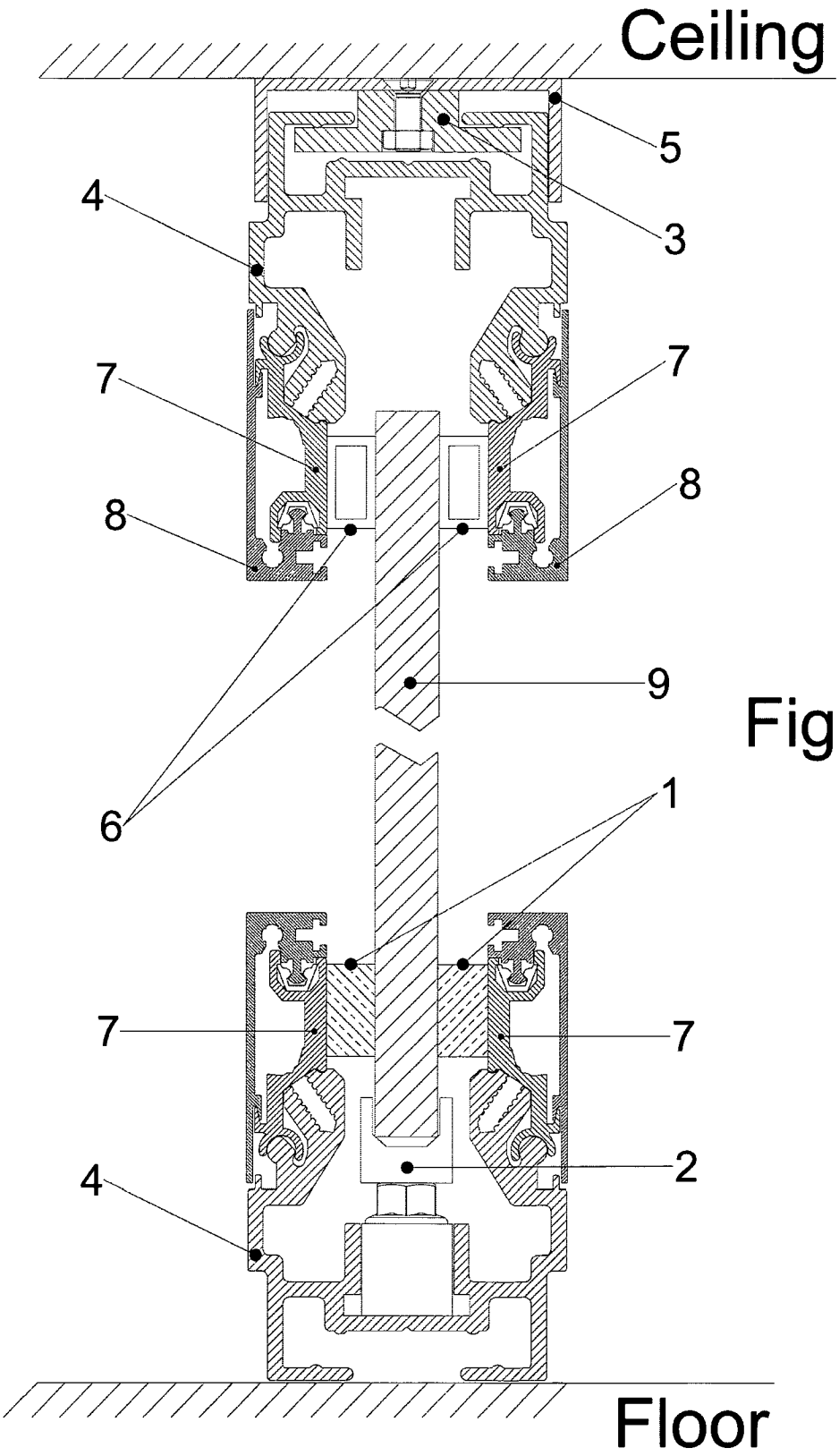


Fig. 1

Fig. 2

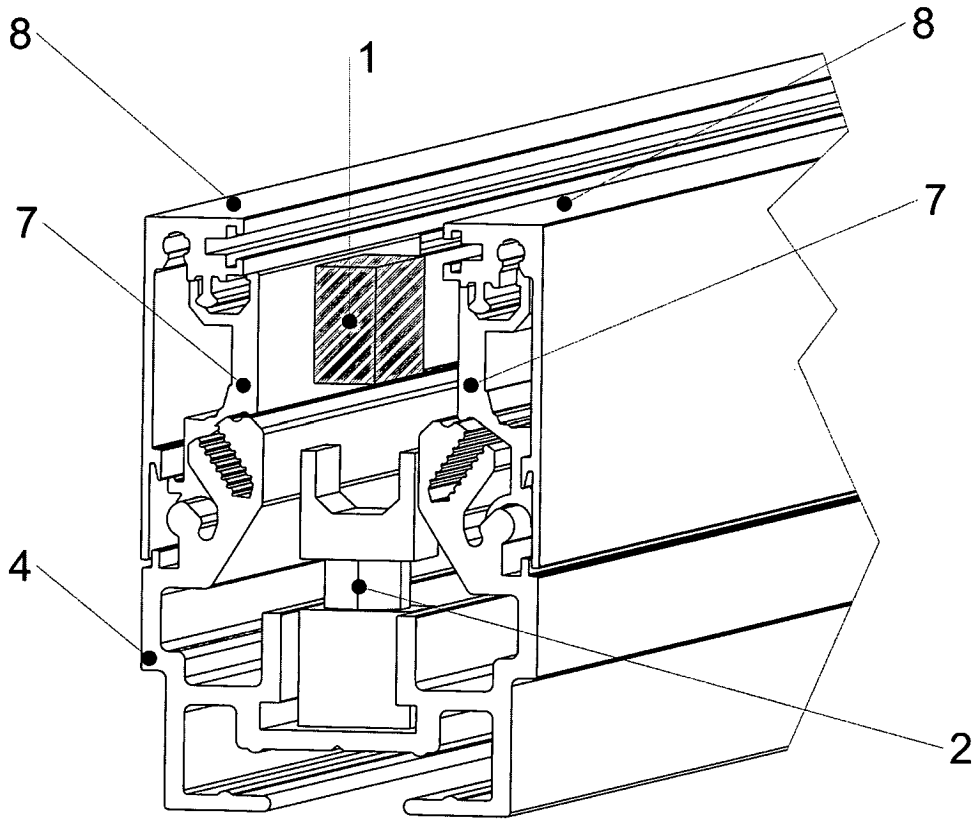
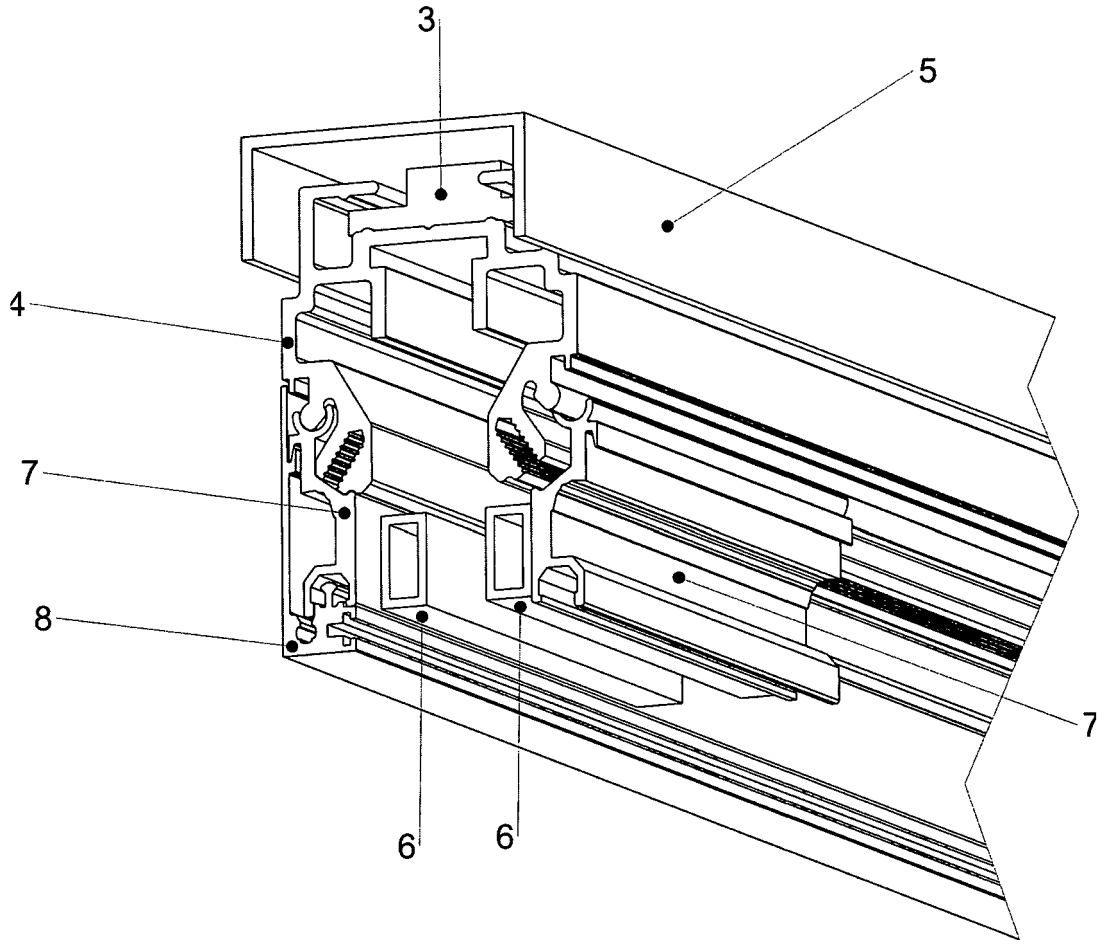


Fig. 3



REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 9238919 B2 **[0009]**
- WO 2014147598 A2 **[0010]**
- CN I04389355 A **[0011]**
- WO 200409398 A1 **[0012]**
- WO 2011048559 A1 **[0012]**