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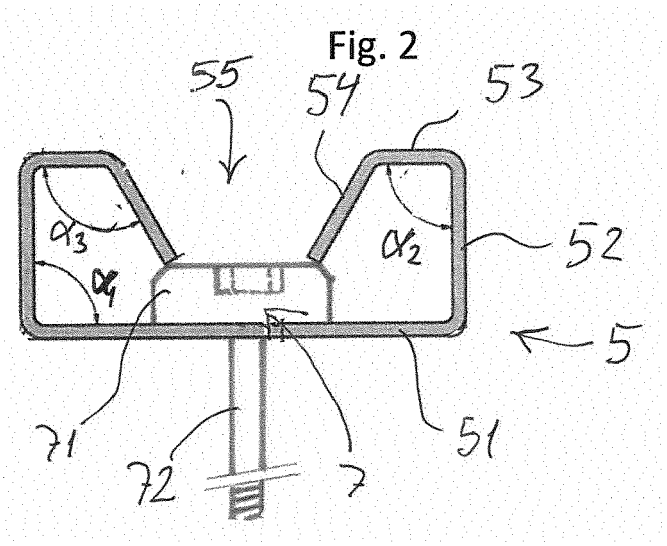
(54) AN ANCHORING RAIL AND A WALL ANCHORING SYSTEM FOR INSULATED WALLS

(57) The present invention concerns a wall anchoring system for an insulated outer building wall, said wall anchoring system comprises a inner wall, an insulation layer and an outer wall, particularly a brick or masonry layer, as the outer protective cover of such building wall; at least one anchoring rail, which is provided on the exterior side of the insulation layer and secured to the inner wall by a plurality of fasteners extending through the insulation layer; said anchoring rail comprising an anchoring rail profile defining a rail longitudinal direction; said anchoring rail profile comprising a base portion extending in a wall plane and in the rail longitudinal direction with openings for receiving anchoring rail fasteners with fastener heads having a fastener head height and a fastener head width, and two longitudinal side flanges disposed opposite each other on each side of said base portion, said side portions extending the rail longitudinal direction and out of the wall plane of the base portion, said side flanges having a first side facing away from the base portion; a retention portion is provided on each of the side flanges so that the two retention portions on the side flanges are projecting toward one another defining a profile slot between each other, said slot having a predetermined width, said retention portions being provided at a first distance from the base portion and the slot is adapted to receive at least one fixing, wherein the retention portions are adapted to clamp the fastener head to retain a fastener, and the width of the slot is less the fastener head width and the first distance is the same as the fastener head height.

Fig. 2



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Description

[0001] The present invention relates to an anchoring rail and a wall anchoring system for insulated outer building walls.

[0002] Wall anchoring systems of many kinds are well known, e.g. in relation to securing a brick or masonry outer wall to a substrate or inner wall of the cavity wall in a building structure. In this connection, it makes no difference whether the structural backup wall, i.e. the substrate or inner wall of the cavity is formed of brickwork, a timber frame, steel frame or concrete structure.

[0003] In a masonry cavity wall with an inner wall or brickwork and an outer brick wall, wall ties or wall anchors are used as point fixing to connect the inner and outer wall in order to provide the necessary structural integrity of the outer building wall. Wall ties or anchors are typically made of metal, plastic or a combination thereof and they may have different shapes, e.g. rod-like or flat plates. In other instances said fixing may comprise line objects, like e.g. holding tracks, or brackets (point fixing) as they are for example used in connection with ventilated façade claddings.

[0004] In the cavity, insulation boards are preferably provided. These insulation boards may be supported by the wall ties in the cavity. The wall ties or anchors may consist of transverse pins, e.g. wire pieces, which are fixed to the inner wall during its construction. The insulation boards are then positioned between these protruding wires or mounted by penetrating the wires through the insulation board. Either way, this has the disadvantage that the insulation boards are not accurately mounted, and may be dislocated when the wall ties are bended to fit between the brick layers of the outer wall. Furthermore, when mounting the insulation over the ties, the insulation may break apart, fall off or holes may be punched out causing thermal bridges.

[0005] Moreover, it is realised that a major disadvantage of these protruding wall ties is that construction workers risk getting hurt when working on a site where cavity walls are under construction. The wall ties often are quite numerous, typically 4-6 pieces per square meter, in order to provide the required strength in the construction to withstand the wind load. By bending the wall ties in order to make them fit with the outer wall construction, the strength of these wall ties is somewhat reduced and there is a risk of some wall ties breaking off. Building requirements generally prescribe a maximum elongation or compression of the wall anchors of 1 mm in the cavity wall. This calls for a high concentration of wall anchors per wall area. However, the wall ties also constitute thermal bridges in the thermally insulated cavity wall construction, and from this perspective, as few wall anchors as possible is preferred, just as fewer wall anchors reduces the building costs involved, and the installation time is shorter.

[0006] A masonry anchoring system with an anchoring rail for wall anchor ties is known from US 7,469,511. The anchoring rails are secured to the inner wall structure by fasteners and possibly accompanied by adhesive. Anchor ties are coupled to the anchoring rail as they bite into the slot formed in the anchoring rail. This system, however, has still the disadvantage that the wall anchor ties constitute thermal bridges in a thermally insulated cavity wall.

[0007] In WO 2005/021883 a wall anchor is disclosed, which is made of a sheet material that is cut into a blank and mounting portions, i.e. the mounting flange and the insulation gripping projections are bent out of the plane. This wall anchor is mounted on the inner wall after it has been raised, preferably together with fitting the insulation slabs. The outer tip of the wall anchor is moulded into the mortar between the bricks during the raising of the outer wall.

[0008] GB-A-2 111 095 discloses a wall anchor made of a sheet material which is cut into a blank and the insulation gripping projections are bent out of the plane. This wall tie is moulded into the mortar between the bricks during the raising of the inner wall. Likewise the outer tip is moulded into the mortar between the bricks during the raising of the outer wall. This wall tie is only useable when the cavity wall includes an inner wall made of bricks that are stacked with an adhesive mortar in between. Moreover, when laying the outer wall, this wall tie must also be bended to fit into the mortar layer between two brick layers. This could cause the insulation boards to be bended or dislocated.

[0009] In WO2014/187726, an innovative new insulating wall construction is disclosed, where columns made of high density mineral wool fibres are provided as load-carrying columns between which insulation panels are provided. This wall structure is advantageous as it is substantially thermal bridge free and provide excellent thermal insulation characteristics. Although an outer cladding can be mounted directly onto this wall structure, there may be circumstances where it is desired to use this wall structure in a cavity wall building construction, for instance with a masonry outer wall constituting the outer protective cover of the building. The columns of this wall construction does offer the possibility of mounting for instance wall ties directly onto the exterior facing mounting elements of the columns, but such mounting, in particular when an insulation layer is provided in the cavity of the cavity wall, may damage the wall ties as they become loaded and unloaded due to variations in wind pressure and wind suction forces acting on the outer wall and the softness or resilience properties of the mineral wool insulation material.

[0010] On this background, it is the object of the present invention to provide an anchoring rail and a wall anchoring system suitable for being used in insulated outer building walls of various types, e.g. cavity walls of buildings, comprising a substrate or inner wall, an insulation layer and an outer wall constituting the outer protective cover or cladding layer of such insulated outer building wall, particularly a brick or masonry layer. Said

wall anchoring system being easy and fast to install and providing very limited thermal bridges.

[0011] This object is achieved by an anchoring rail according to a first aspect of the invention. Further this object is also achieved by a second aspect of the invention, which is a wall anchoring system for an insulated outer building wall comprising

a substrate or inner wall, an insulation layer and an outer wall, particularly a brick or masonry layer, as the outer protective cover or cladding layer of such building wall;
at least one anchoring rail, which is provided on the exterior side of the insulation layer and secured to the inner wall by a plurality of fasteners extending through the insulation layer; said anchoring rail comprising an anchoring rail profile defining a rail longitudinal direction; said anchoring rail profile comprising
a base portion extending in a wall plane and in the rail longitudinal direction with openings for receiving anchoring rail fasteners with fastener heads having a fastener head height and a fastener head width, and
two longitudinal side flanges disposed opposite each other on each side of said base portion, said side portions extending the rail longitudinal direction and out of the wall plane of the base portion, said side flanges having a first side facing away from the base portion;
a retention portion is provided on each of the side flanges so that the two retention portions on the side flanges are projecting toward one another defining a profile slot between each other, said slot having a predetermined width, said retention portions being provided at a first distance from the base portion and the slot is adapted to receive at least one fixing, wherein the retention portions are adapted to clamp the fastener head to retain a fastener, and the width of the slot is less the fastener head width and the first distance is the same as the fastener head height.

[0012] The present invention is concerned with insulated outer building walls, e.g. cavity walls of buildings, comprising a substrate or inner wall, an insulation layer and an outer wall constituting the outer protective cover or cladding layer of such walls. By the invention there is provided an anchoring and insulation arrangement with an anchoring rail profile, e.g. from steel metal, fixing and securing the insulation in front of the substrate or inner wall of a building, and at the same time securing the outer wall via fixings that are locked in the anchoring rail profile. The anchoring rail profile according to the first aspect of the invention is made special in its shape, so that the rail profile fulfils two functions at the same time:

Firstly and most relevant, it secures the insulation layer and handles wind pressure and suction forces on the wall - the fastener head of the screw is 'clicked' into the profile and the retention portions of the profile keeps it in place ('click on') so that no axial movement is possible on the screw shaft. By the invention it is found advantageous that the anchoring rail profile is fixed in position and the rail cannot axially move on the screw shaft, e.g. as might be caused by wind suction or wind pressure forces.

Secondly, it is possible to place the fixing, in particular a point fixing all along the length of the profile. The fixing can be inserted into the vertical rail profile and is fixed/secured e.g. when turned by 90 degrees or locked in position behind the retention portions of the anchoring rail. Said fixing in case of wall ties or wall anchors are placed into the mortar layer between the outer bricks where required and along with the brick laying process. In case of a ventilated façade cladding said fixing, i.e. a respective bracket, will be fixed/secured the same way for mounting the cladding layer.

[0013] As an alternative, in case of a line fixing, like e.g. holding tracks of a ventilated façade cladding, the fixing is fixed/secured by screws or similar means directly onto the anchoring rail profile, specifically its outer surface opposite the base portion. Preferably, the design of the line fixing is thus adopted to fit the special shape of the anchoring rail profile.

[0014] The wall anchoring system and the anchoring rail profile according to the invention is advantageous since by the invention it is made possible to provide a wall anchoring system which can be mounted directly onto the insulation, such as mineral wool fibrous insulation, of e.g. a cavity wall, although the insulation is flexible/compressible and not supporting the load-bearing capacity of the system as such. However, it is realized that at certain density ranges of higher level and thus raised strength mounting of the anchoring rail profile is supported by the insulation.

[0015] The anchoring rail profile according to the first aspect of the invention is made special in its shape, and in a first embodiment the side portions extending perpendicular to the wall plane of the base portion. Furthermore, preferably the anchoring rail profile is made of one strip of material, such as a metal or metal alloy, in particular steel or aluminium or their respective alloys, which is bent into shape. This allows for an easy and cost-effective manufacture of the anchoring rail profile. By the invention, it is found that the anchoring rail profile may advantageously be provided with a thickness of the material between 0.5-2.0 mm.

[0016] In one embodiment, the retention portions are inwardly bent clamping flanges on the distal sides of the side flanges opposite the base portion. Furthermore, intermediate flanges may be formed between inwardly bent clamping flanges and the distal sides of the side flanges opposite the base portion, said intermediate flanges be-

ing substantially parallel to the base portion. Hereby, a profile shape is achieved, which allows for the fastener head to click into the slot, and where the head is firmly clamped between the distal ends of the retention flanges and the base portion once the fastener head is fully inserted into the profile. The shape of the anchoring rail profile with a substantially C-shaped cross-section is also providing stiffness and prevents bending of the profile.

[0017] In a second embodiment, the anchoring profile may be formed with retention portions as inwardly projecting protrusions on the middle sections of the side flanges. This shape may be supplemented with outwardly projecting positioning flanges at the distal sides of the side flanges opposite the base portion, said outwardly projecting flanges being substantially parallel to the base portion. Other shapes of the anchoring rail profile according to the invention may also be provided.

[0018] In the wall anchoring system of the invention the insulation layer preferably comprises mineral wool fibrous panels, preferably with a density of 30-250 kg/m^3, more preferably of 50-150 kg/m^3. Thus, since the anchoring rail profile is fixed in position and cannot axially move on the screw shaft, e.g. as might be caused by wind suction or wind pressure forces, the wall anchoring system may be used in connection with normal types of insulation, such as the mineral wool with densities within this range.

[0019] In the wall anchoring system of the invention, the at least one anchoring rail is preferably provided in a groove on the exterior side of the insulation layer, said groove preferably being machined into the surface of the insulation layer. Hereby, the anchoring system does not take up additional space and the cavity wall thickness can be reduced.

[0020] In the preferred embodiments of the invention, the anchoring rail is provided with a vertical orientation. However, it is realised that other orientations may be chosen if circumstances favour such other orientations.

[0021] In the preferred embodiments of the wall anchoring system of the invention, the fastener is a screw. However, other types of fasteners may also be used.

[0022] In yet another preferred embodiment of the wall anchoring system according to the invention, the fixing has a gripping end and an outer wall mounting end, where the gripping end is preferably provided with T-shape so that the fixing is adapted for being introduced into the slot of the anchoring rail and locked therein by turned the fixing after introduction. Hereby a simple mounting of the fixing is achieved as the groove of the anchoring rail is used both for locking the fastener head and for locking the fixing. This fixing arrangement is moreover advantageous as the fixing can be mounted at any level in the anchoring rail profile, in particular in case of point fixings. Preferably, the fixing is a wall tie and made of plastic so that thermal bridging as well as corrosion in the wall anchoring system are avoided.

[0023] In the following, the invention is described with reference to embodiments shown in the accompanying drawings, in which:

- Fig. 1a-c show three schematic cross-sectional views of an insulated outer building wall with a wall anchoring system according to three embodiments of the invention;
- Fig. 2 is a cross-sectional view of an anchoring rail according to a first embodiment of the invention;
- Fig. 3 is a front view of a wall tie mounted in an anchoring rail profile according to a first embodiment of the invention;
- Fig. 4 is a perspective view of the wall tie mounted in the anchoring rail profile shown in fig. 3;
- Fig. 5 is a second embodiment of the anchoring rail profile according to the invention;
- Fig. 6 is a third embodiment of the anchoring rail profile according to the invention;
- Fig. 7 is a schematic sectional view of the anchoring rail profile mounted in the insulation according to an embodiment of the invention;
- Fig. 8 is a detailed schematic view of the anchoring rail profile mounted in the insulation for a ventilated façade according to an embodiment of the invention, and
- Fig. 9 is a detailed schematic view of the anchoring rail profile mounted in the insulation for a ventilated façade according to another embodiment of the invention.

[0024] In figure 1a, a cavity wall is shown, which has a substrate 1 and an outer wall 2 with an insulation layer 3 there between. In the example shown in fig. 1a of the cavity wall, an additional insulation is comprised in the inner wall 1, which is made of load-bearing columns 4 having insulation slabs 9 between the columns 4 in accordance with the insulating wall system described in WO 2014/187726, which is hereby incorporated by reference.

[0025] At each column 4 there is mounted an anchoring rail profile 5 on the outer side of the insulation layer 3, respectively the insulation spacer element 8 being part of the insulation layer. The anchoring rail profile 5 is accommodated in a groove 31 provided in the insulation spacer element 8 of the column 4 (similar to the groove 31 shown in more detail in fig. 7). The anchoring rail profile 5 is fixed to the innermost element of the column 4 which serves as a substrate1 by a number of fasteners 7 along the length of the profile 5 (in the figures only one fastener 7 is shown).

[0026] The fasteners 7 are provided with fastener heads 71 and inserted into a groove 55 in the anchoring profile 5 and through the base portion 51 of the profile 5 (fig. 2). The fasteners 7 further extend through the insulation and into the substrate 1. In the anchoring rail profile 5 one or more fixings, such as wall ties 6 are mounted. These wall ties 6 extend into the outer wall 2 and are secured in the outer wall, e.g. in the mortar between the bricks of which the outer wall 2 may be built. The anchor-

ing rail profile 5 is shaped such that the fastener head 71 is clamped into a fixed position in the profile 5. In a first embodiment (see fig. 2), inwardly bent flanges 54 lock the screw heads 71 of the fastening screws 7 that secure the anchoring rail profile 5 to the building substrate 1 as well as the base portion 61 of the wall ties 6. In this way the anchoring rail profile 5 is fixed in position and the anchoring rail profile 5 cannot axially move on the screw shaft 72, e.g. as might be caused by wind suction or wind pressure forces.

[0027] In figure 1b, another embodiment of a cavity wall is shown, where the inner wall 1 is a brick wall. The inner wall 1 is provided with an insulation layer 3, and the fastener 7 is secured to the inner wall and retains the profile 5 in a groove 31 of the insulation layer 3.

[0028] In fig. 1c, a ventilated façade building wall is shown. The inner wall 1 is a concrete wall. The inner wall 1 is provided with an insulation layer 3, and the anchoring rail profile 5 is secured by fasteners 7, which similar to the embodiment shown in fig. 1b is secured to the inner wall 1. In the anchoring rail profile 5 a plurality of fixings 6 are provided. These fixings 6 are constituted by mounting brackets to which is mounted a holding member 11. Onto this holding member 11 the outer façade cladding 10 is mounted. The holding member 11 will typically be an elongated holding track 11 mounted in parallel to the anchoring rail 5 and thereby providing a fixing base for the outer building screen or façade cladding 10.

[0029] As mentioned above, the anchoring rail profile 5 is shaped such that the fastener head 71 is clamped into a fixed position in the profile 5. In fig. 2 a first embodiment of such a shape of the anchoring rail 5 is shown. The anchoring rail profile 5 is formed from a strip of metal, such as steel, which is bent into its shape, preferably with a symmetry line along the profile length. The profile has a base portion 51 with orthogonally oriented side portions 52, i.e. $\alpha_1 = 90°$ (see fig. 2). An inwardly bent intermediate portion 53 is provided at the top of the side portions 52 opposite the base portion 51. These intermediate portions 53 are preferably substantially parallel to the base portion 51, i.e. $\alpha_2 = 90°$ (see fig. 2). Extending inwardly from the intermediate portions 53, inclined retention portions 54 are formed. These retention portions 54 are bent in an angle α_3 which is a blunt angle, preferably $\alpha_3 = 120°$, and forming a groove 55 which at the tips of the retention portions 54 has a width which is slightly less than the diameter of the fastener head 71 and which tips of the retention portions 54 are provided at a level or distance above the base portion 51 which is the same or a little less than the height of the fastener head 71.

[0030] By this shape, the anchoring rail profile 5 is provided with spring-back properties so that the retention portions 54 (and possibly also the side portions 52) will elastically bend further as the fastener head 71 is advanced into the groove 55. The profile 5 is dimensioned such that as soon as the fastener head 71 reaches the base portion 51, the retention portions 54 (and the side portions 52) spring back and lock the head inside the profile 5.

[0031] Besides being designed for receiving and firmly gripping the fastener heads 71, the groove 55 of the anchoring rail profile 5 is also designed for receiving the fixing 6, e.g. a wall tie. As shown in figures 3 and 4, a wall tie is provided with a T-shaped base portion 61 at the gripping end of the wall tie 6. This T-shape means that the wall tie 6 has a traverse element at the end. This traverse element has a length which nearly corresponds to the inner dimension of the base portion of the profile 5. The T-shaped base portion 61 of the wall tie 6 is inserted into the groove 55 of the anchoring rail profile 5 with the traverse element parallel to the direction of the groove 55 and then turned approx. 90° whereby the traverse element becomes clamped and locked in the anchoring rail profile 5.

[0032] In the same plane as the traverse element at the base end 61 the wall tie also is formed with an outer wall mounting end 62 in the form of a loop, eye or similar suitable shapes for firmly retaining a wall tie 6 in the mortar between bricks of the outer wall 2. This loop end 62 becomes oriented perpendicular to the orientation of the anchoring rail profile 5, which preferably is vertical so that the wall ties are aligned with the bricks in the outer wall 2.

[0033] In figure 5 a second embodiment of the anchoring rail profile is shown. In this embodiment, the profile 5 is also symmetrical about the base portion 51. On each side of the base portion side portions 52 are provided. On the side portions 52 inwardly protruding retention portions 54 are formed. On the top of the side portions exterior portions 56 are formed which can rest on the exterior side of the insulation layer. The exterior portions may be ended in a gripping flange 57 for better fixation of the anchoring profile 5 in the insulation. The retention portions 54 are formed on the side flanges 52 so that the side flanges 52 give way as the fastener head 71 is advanced into the groove 55, but as soon as the head 71 has reached the base portion 51, the side portions 52 snap back and the retention portions 54 then firmly grip and lock the fastener head 71 in the profile 5.

[0034] In figure 6 a third embodiment of the anchoring rail 5 is shown. This profile shape is somewhat similar to the shape of the first embodiment but without the intermediate portions. Instead the upright standing side portions 52 are bend into inwardly retention flanges 54 at the side opposite the base portion 51.

[0035] With reference to figure 7, the anchoring rail profile 5 may preferably be accommodated in a groove 31 machined in the exterior side of the insulation layer 3. The groove 31 is preferably provided with a shape congruent to the exterior shape of the anchoring rail profile 5 to ensure a snugly fit of the rail profile 5 in the groove 31.

[0036] In figures 8 and 9 two embodiments are illustrated comprising a line fixing providing a holding track 11 for the ventilated façade application. The elongated holding track 11 is directly applied to the anchoring rail 5 and connected with screws 12. The elongated holding track 11 is provided with a ridge 11a, which fits into the

groove 55 of the anchoring rail profile 5. The holding track 11 is generally flat and adapted to receive the outer building screen or façade cladding 10 (see fig. 1c). The anchoring rail profile 5 is raised out of the plane of the insulation layer 3. In fig. 8 there is shown an embodiment, where a spacer element 8 extends out of the outer plane of the insulation layer 3. The anchoring rail profile 5 is mounted in a groove 31 of this spacer element 8 by fasteners 7 where the fastener heads 71 are 'clicked' into position as explained above in relation to e.g. figs. 2 and 7.

[0037] In fig. 9 an alternative embodiment of the ventilated façade application is shown. In this embodiment, there is a different positioning of the anchoring rail profile 5 which is also provided with a different shape comprising support wings 58 adapted to rest on the outside surface of the insulation layer 3 and due to the height of the anchoring rail profile 5 creating a respective ventilation channel 13. The outer façade cladding 10, such as a rainscreen is mounted directly onto the holding track 11, similar to the mounting indicated in fig. 8, which may be a standard rainscreen cladding system of the prior art.

[0038] The invention is described above with reference to some currently preferred embodiments. However, it is realised that variants may be provided, e.g. anchoring rail profiles with different shapes may be provided depending on the size and shape of associated fastener heads.

Claims

1. An anchoring rail for a wall anchoring system, said anchoring rail being adapted for receiving at least one fixing and adapted for being secured to a substrate or inner wall by a plurality of fasteners, the anchoring rail comprising:

an anchoring rail profile defining a rail longitudinal direction; said anchoring rail profile comprising

a base portion extending in a wall plane and in the rail longitudinal direction with openings for receiving anchoring rail fasteners of the type having fastener heads with a fastener head height and a fastener head width, and

two longitudinal side flange disposed opposite each other on each side of said base portion, said side portions extending the rail longitudinal direction and out of the wall plane of the base portion, said side flanges having a first side facing away from the base portion;

a retention portion is provided on each of the side flanges so that the two retention portions on the side flanges are projecting toward one another defining a profile slot between each other, said slot having a predetermined width, said retention portions being provided at a first distance from the base portion and the slot is adapted to receive at least one fixing,

characterised in that

the retention portions are adapted to clamp a fastener head to retain said fastener, and the width of the slot is less the fastener head width and the first distance is the same as the fastener head height.

2. An anchoring rail according to claim 1, wherein the side portions extending perpendicular to the wall plane of the base portion.

3. An anchoring rail according to claim 1 or 2, wherein the anchoring rail profile is made of one strip of material, such as a metal or metal alloy, in particular steel or aluminium or their alloys, which is bent into shape.

4. An anchoring rail according to any one of the preceding claims, wherein the anchoring rail profile is provided with a thickness of the material between 0.5-2.0 mm.

5. An anchoring rail according to any one of the preceding claims, wherein the retention portions are inwardly bent clamping flanges on the distal sides of the side flanges opposite the base portion.

6. An anchoring rail according to any one of the preceding claims, wherein intermediate flanges are formed between inwardly bent clamping flanges and the distal sides of the side flanges opposite the base portion, said intermediate flanges being substantially parallel to the base portion.

7. An anchoring rail according to any one of the preceding claims, wherein the anchoring rail profile has a substantially C-shaped cross-section.

8. An anchoring rail according to any one of claims 1 to 4, wherein the retention portions are inwardly projecting protrusions on the middle sections of the side flanges.

9. An anchoring rail according to claim 8, wherein outwardly projecting positioning flanges at the distal sides of the side flanges opposite the base portion, said outwardly projecting flanges being substantially parallel to the base portion.

10. A wall anchoring system for an insulated outer building wall comprising

a substrate or inner wall, an insulation layer and an outer wall, particularly a brick or masonry layer, as the outer protective cover or cladding layer of such building wall;

at least one anchoring rail, which is provided on the exterior side of the insulation layer and secured to the inner wall by a plurality of fasteners extending through the insulation layer; said anchoring rail comprising an anchoring rail profile defining a rail longitudinal direction; said anchoring rail profile comprising
a base portion extending in a wall plane and in the rail longitudinal direction with openings for receiving anchoring rail fasteners with fastener heads having a fastener head height and a fastener head width, and
two longitudinal side flanges disposed opposite each other on each side of said base portion, said side portions extending the rail longitudinal direction and out of the wall plane of the base portion, said side flanges having a first side facing away from the base portion;
a retention portion is provided on each of the side flanges so that the two retention portions on the side flanges are projecting towards one another defining a profile slot between each other, said slot having a predetermined width, said retention portions being provided at a first distance from the base portion and the slot is adapted to receive at least one fixing, wherein
the retention portions are adapted to clamp the fastener head to retain a fastener, and the width of the slot is less the fastener head width and the first distance is the same as the fastener head height.

11. A wall anchoring system according to claim 10, wherein the insulation layer comprises mineral wool fibrous panels, preferably with a density of 30-250 kg/m^3, more preferably of 50-150 kg/m^3.

12. A wall anchoring system according to claim 10 or 11, wherein the at least one anchoring rail is provided in a groove on the exterior side of the insulation layer, said groove preferably being machined into the surface of the insulation layer.

13. A wall anchoring system according to any one of claims 10 to 12, wherein the anchoring rail is provided with a vertical orientation.

14. A wall anchoring system according to any one of claims 10 to 13, wherein the fastener is a screw.

15. A wall anchoring system according to any one of claims 10 to 14, wherein the fixing has a gripping end and an outer wall mounting end, where the gripping end is provided with T-shape so that the fixing is adapted for being introduced into the slot of the anchoring rail and locked therein by turned the fixing after introduction.

16. A wall anchoring system according to any one of claims 10 to 15, wherein the fixing is a wall tie, preferably made of plastic.

17. A wall anchoring system according to any one of claims 10 to 15, wherein the fixing comprises at least one line fixing, preferably an elongated holding track for receiving the outer building screen or cladding layer, where said line fixing is provided substantially parallel to an anchoring rail.

18. A wall anchoring system according to any one of claims 10 to 17, wherein the anchoring rail is according to any of claims 1 to 9.

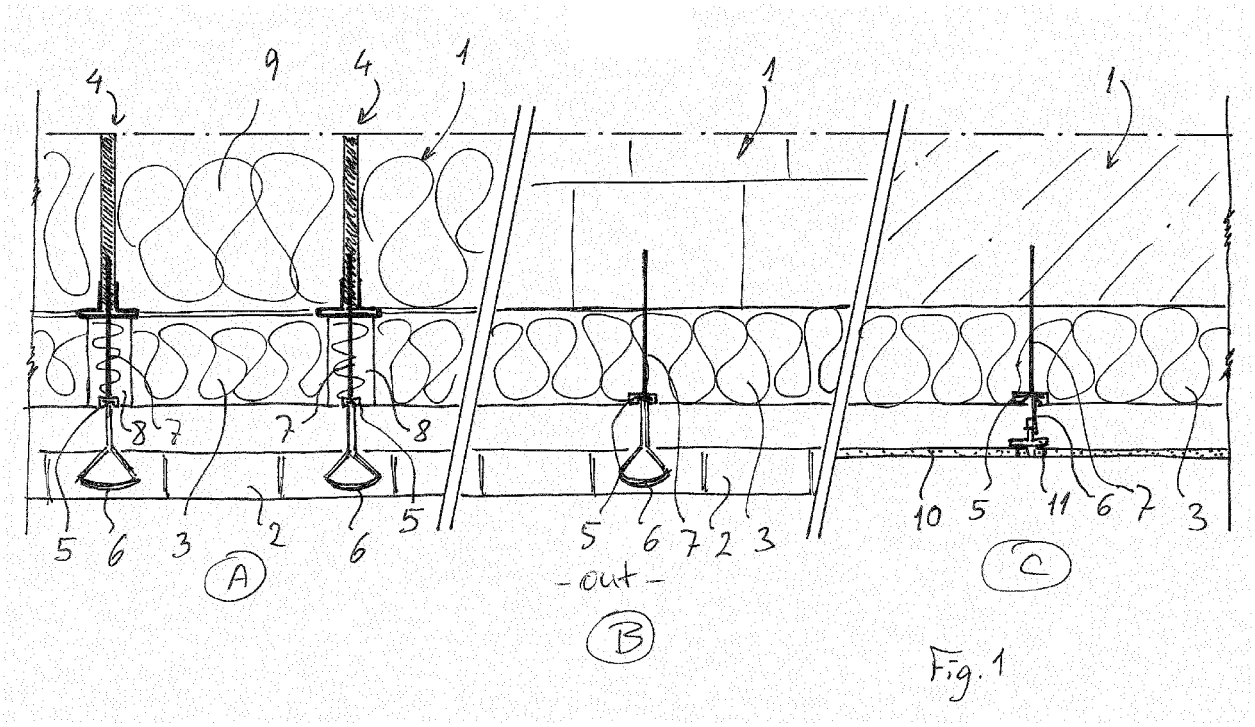

Fig. 1

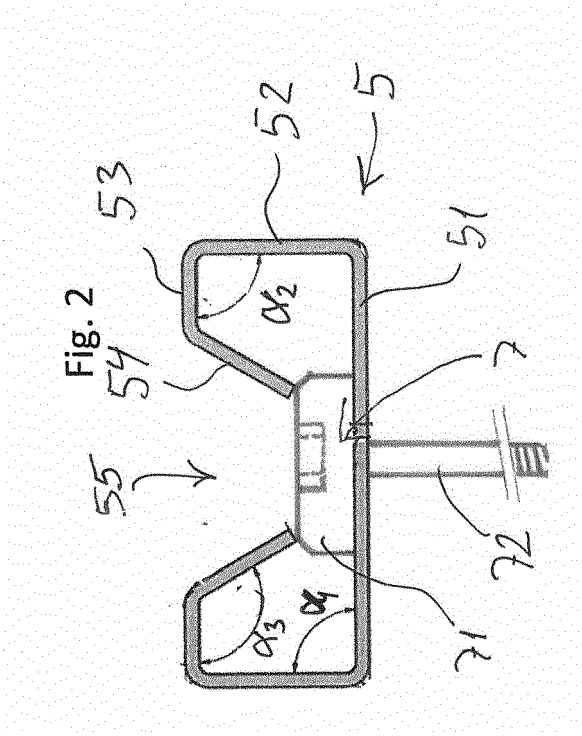

Fig. 2

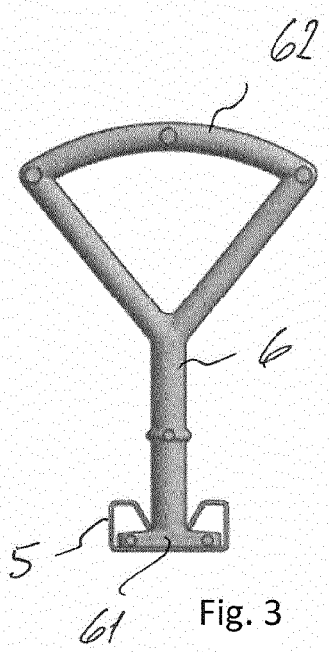

Fig. 3

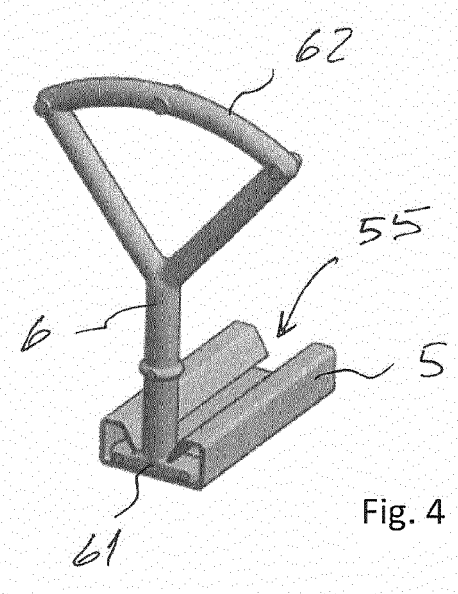

Fig. 4

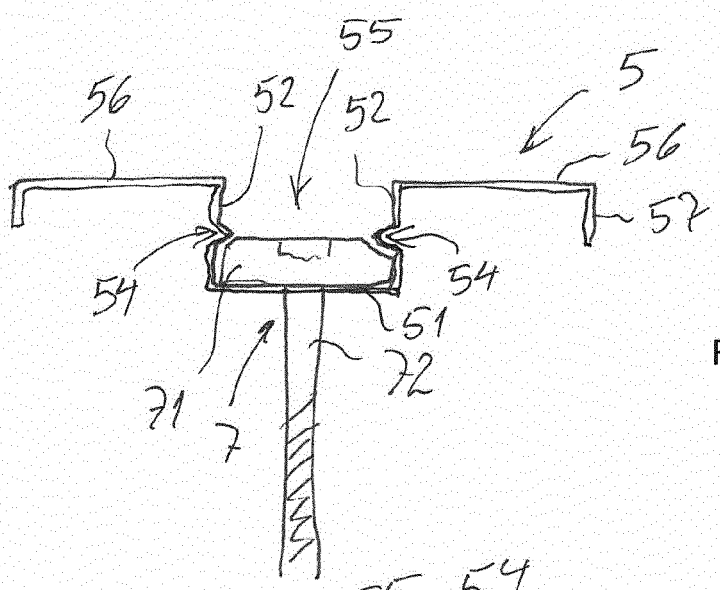

Fig. 5

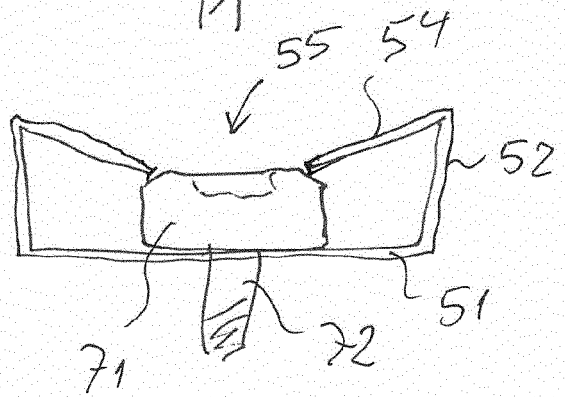

Fig. 6

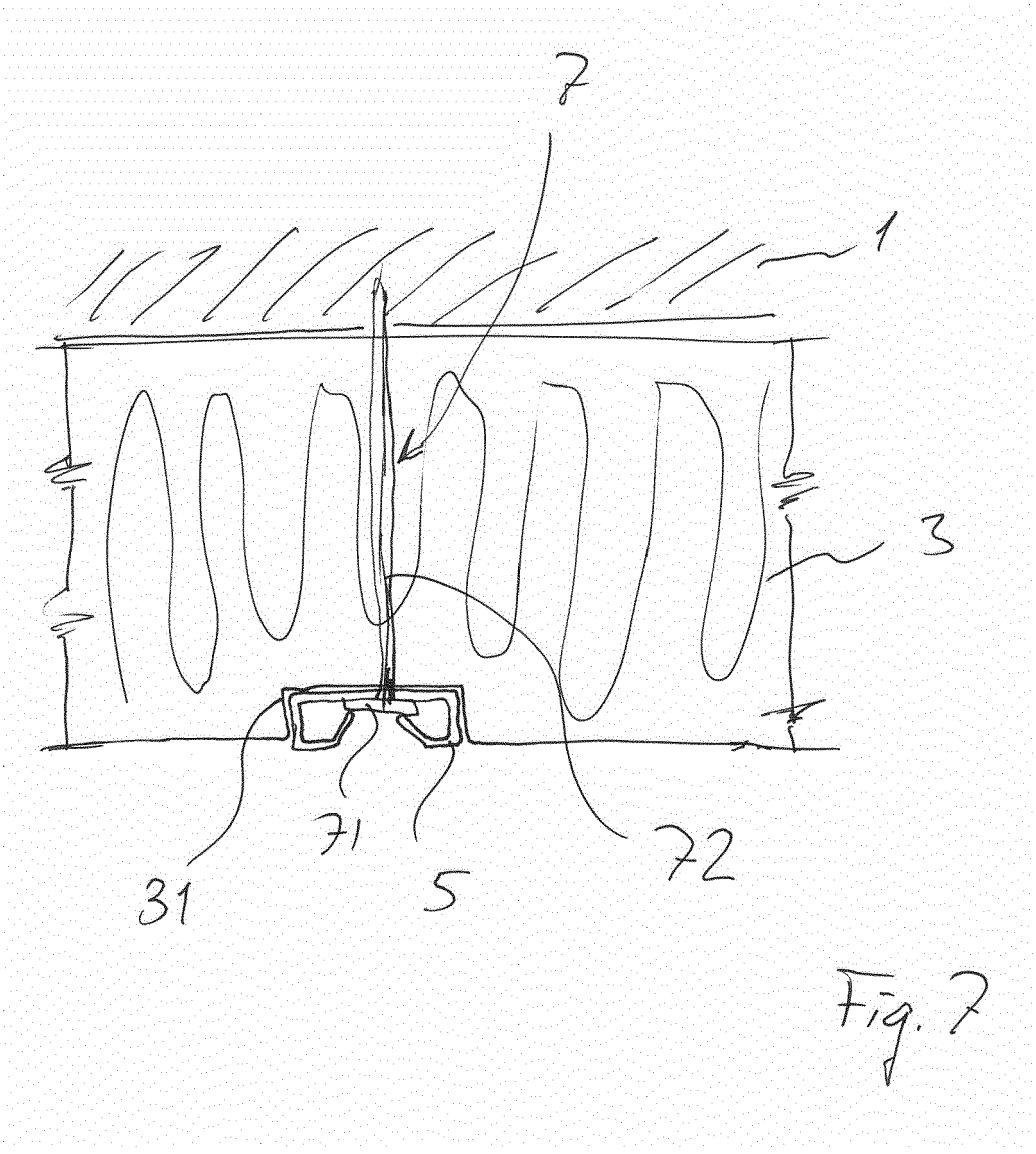

Fig. 7

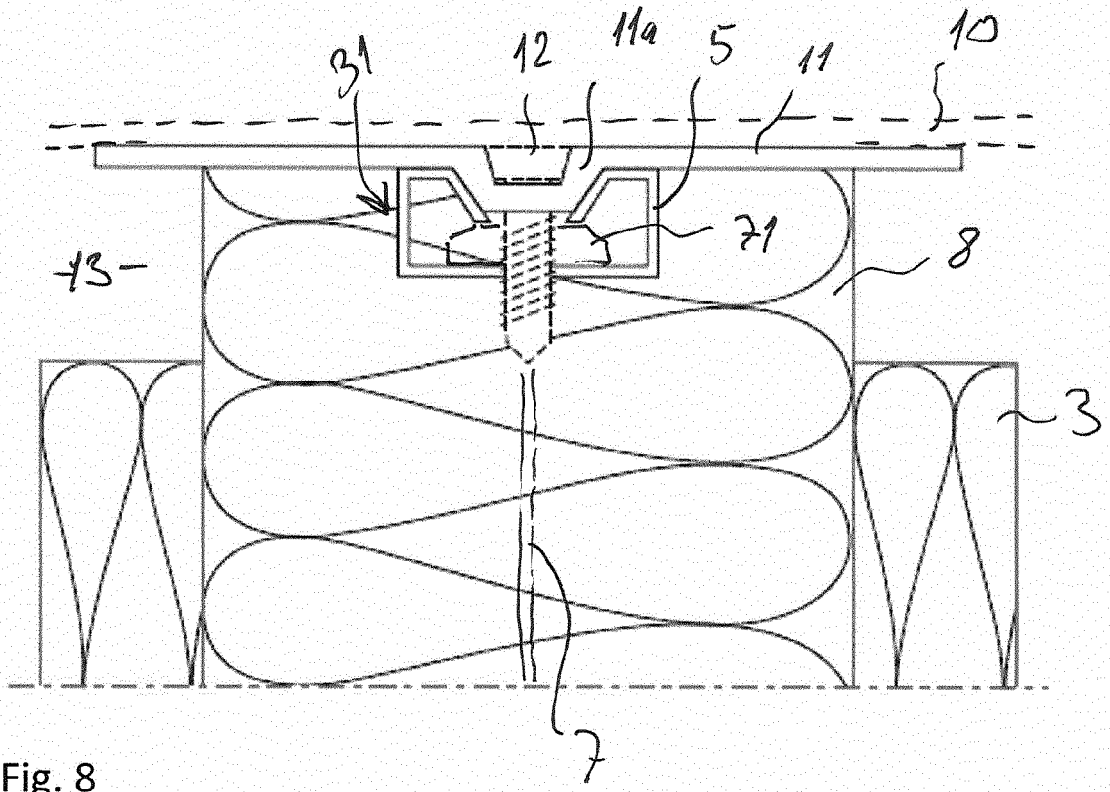

Fig. 8

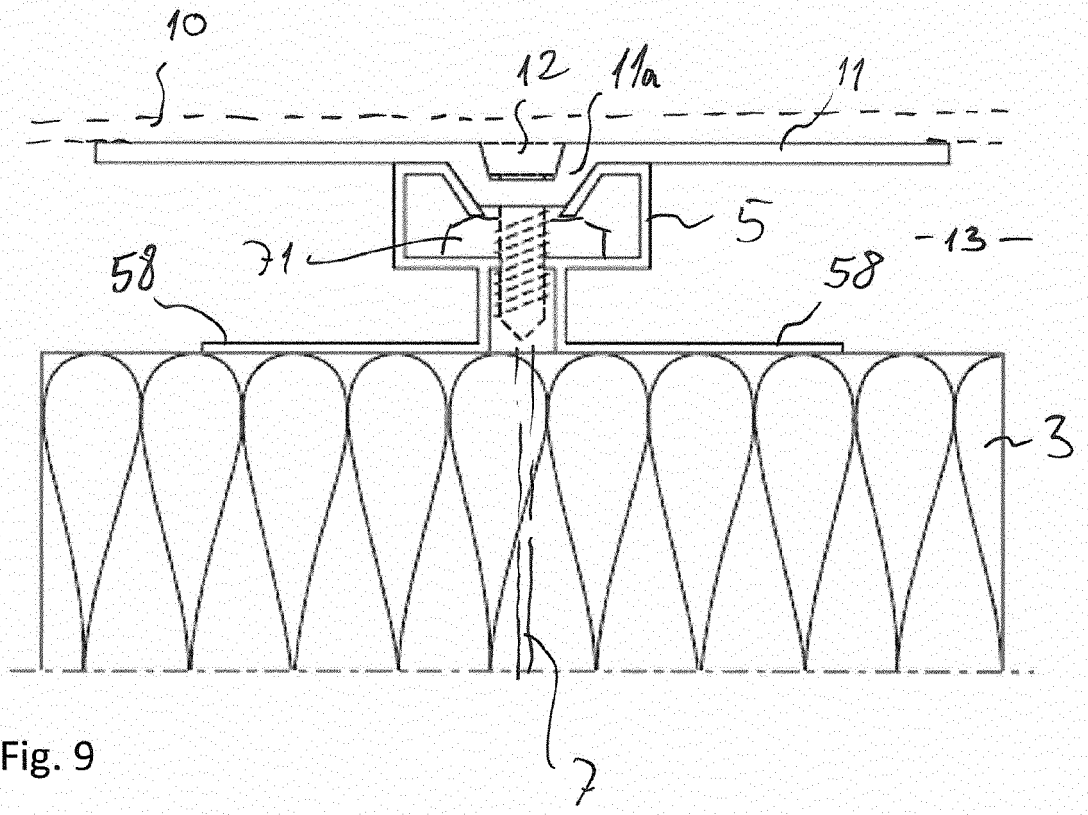

Fig. 9

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EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	6 April 2020	Arsac England, Sally

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