

(19)



(11)

EP 4 502 312 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
05.02.2025 Bulletin 2025/06

(51) International Patent Classification (IPC):
E04F 13/00 (2006.01) **E04B 1/76** (2006.01)
E04F 13/08 (2006.01)

(21) Application number: **24192262.4**

(52) Cooperative Patent Classification (CPC):
E04F 13/007; E04F 13/0803; E04F 13/0805

(22) Date of filing: **01.08.2024**

(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 ME MK MT NL
NO PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA
Designated Validation States:
GE KH MA MD TN

(71) Applicant: **Backforce BV**
9900 Eeklo (BE)

(72) Inventor: **De Paepe, Jan**
9900 Eeklo (BE)

(74) Representative: **Brantsandpatents bv**
Pauline Van Pottelsberghelaan 24
9051 Ghent (BE)

(30) Priority: **01.08.2023 BE 202305639**
01.08.2023 BE 202305640

(54) BASIC PROFILE FOR ATTACHING FACADE CLADDING TO INSULATED AND/OR VENTILATED FACADES

(57) The current invention relates to a basic profile for attaching facade cladding to insulated and/or ventilated facades, wherein the basic profile is an extruded profile, wherein the basic profile comprises a mounting surface for attaching facade cladding, wherein the basic profile comprises at least one angled mounting screw chamber for receiving a mounting screw, wherein the at least one angled mounting screw chamber is located in a first half-space, bounded by the mounting surface, wherein the at

least one angled mounting screw chamber comprises a support surface for supporting a screw head of the mounting screw, and wherein an angle between the support surface of the at least one angled mounting screw chamber and the mounting surface is at least 15° and at most 45°. The present invention also relates to a use of the basic profile for attaching facade cladding to an insulated and/or ventilated facade.

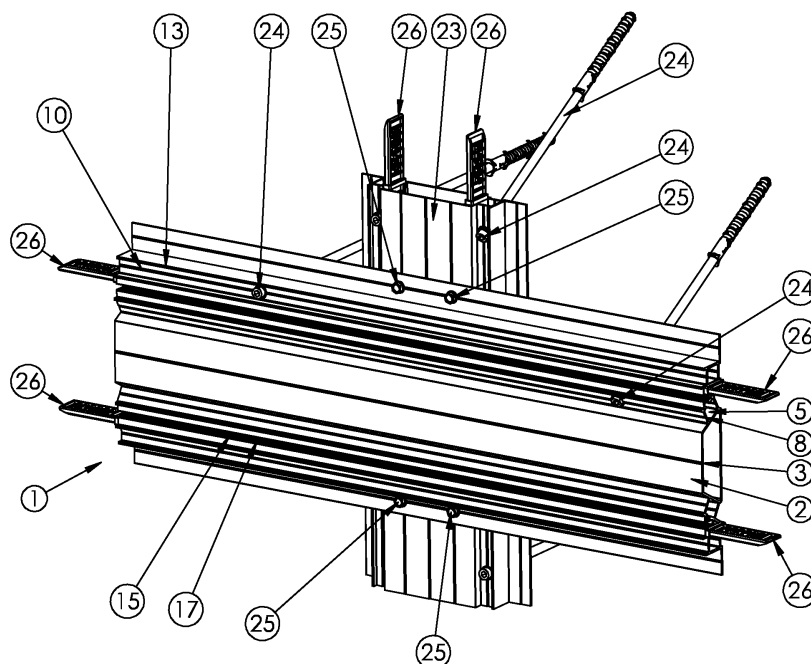


FIG. 4

EP 4 502 312 A1

Description

TECHNICAL FIELD

[0001] The invention relates to a basic profile for attaching facade cladding to facades, more particularly to insulated and/or ventilated facades and to a use of the basic profile for attaching facade cladding to an insulated and/or ventilated facade.

PRIOR ART

[0002] Facade panels have been used for a very long time to clad facades. Traditionally, wooden slats are used for this purpose. The wooden slats form a grid on the facades to which the facade panels are attached. In recent years, the insulation standards for buildings have tightened significantly. Typically, hard insulation boards or (soft) rock wool are now placed against a facade as an insulation layer. This means that the wooden slats can no longer be placed on the facade itself, but must be applied parallel to the insulation layer, taking into account a ventilation gap between the insulation layer and the wooden slats. The insulation layer does not have sufficient load-bearing capacity to support the wooden slats and the facade cladding. This is an additional difficulty. Additionally, after a number of incidents, the fire regulations have also been greatly tightened, making it no longer permissible to use wooden slats and rigid insulation boards made of PUR or PIR.

[0003] A known alternative is the use of aluminum profiles. First, L-shaped brackets are placed on the facade. The L-shaped brackets extend through the insulation boards. This is always an interruption of the insulation envelope, which is detrimental to the effective insulation of the facade. To avoid thermal bridges, plastic spacers are placed between the L-shaped brackets and the facade. Placing these plastic spacers is labor-intensive. Alternatively, the L-shaped brackets with pressure plates are placed on the rigid insulation boards, which will no longer be possible in the future due to the disappearance of this type of insulation. T-shaped profiles are attached to the L-shaped brackets. The facade cladding is attached to the lying leg of the T-shaped profiles. This known solution requires several steps and offers little flexibility in terms of the desired facade cladding.

[0004] An example of a facade cladding system that uses L-shaped brackets and aluminum profiles is described in EP2309072.

[0005] Another known solution is described in NL2010093 (NL '093). NL '093 describes a wall covering that is attached to a wall using a support beam and mounting screws. The support beam comprises a guide element for guiding a mounting screw into the wall at an angle. The support beam from NL'093 has the disadvantage that it cannot be extruded.

[0006] The present invention aims to at least find a

solution to some of the above-mentioned problems or disadvantages.

SUMMARY OF THE INVENTION

[0007] In a first aspect, the present invention relates to a basic profile according to claim 1.

[0008] The basic profile is advantageous because it can be mounted in a horizontal position on an underlying wall of insulated and/or ventilated facades, in front of and parallel thereto. The at least one angled mounting screw chamber ensures that the mounting screw can be automatically screwed upwards at an angle of at least 15° and at most 45° into the underlying wall of the insulated and/or ventilated facade. This angle ensures an optimal attachment of the basic profile to the insulated and/or ventilated facade, reducing the risk of detachment of the basic profile and thus the facade cladding. The angle at which the mounting screw is screwed into the facade does not need to be measured but is indicated by the at least one angled mounting screw chamber, which provides a significant time saving during installation. It also avoids the use of a less optimal angle when screwing down the basic profile. It is particularly advantageous that no elements, such as L-shaped brackets, need to be placed directly on the facade or on the insulation material, again saving installation steps and preventing the insulation envelope from being repeatedly interrupted.

[0009] Preferred embodiments of the basic profile are shown in claims 2-9.

[0010] A specific preferred embodiment concerns a basic profile according to claim 5.

[0011] The at least one straight mounting screw chamber is advantageous for securing the basic profile in a substantially horizontal position to a vertical profile that is attached to an underlying wall of an insulated and/or ventilated facade, in front of and parallel thereto. The basic profile can thus be simultaneously attached with mounting screws in the at least one angled mounting screw chamber to the underlying wall of the facade and with screws in the at least one straight mounting screw chamber to the vertical profile. This is particularly advantageous if more space between the insulation material and the facade cladding is required. Additionally, the basic profile can be additionally fastened to the underlying wall of the facade with mounting screws that are screwed into the underlying wall of the facade, resulting in a very secure anchoring of the basic profile to the underlying wall of the insulated and/or ventilated facade. The at least one straight mounting screw chamber also allows the basic profile to be attached in a vertical position to the underlying wall of the insulated and/or ventilated facade, whereby mounting screws in the at least one straight mounting screw chamber are screwed into the underlying wall of the facade both transversely and at an angle. In this case, however, it is necessary to measure the angle at which the mounting screw is screwed into the underlying wall of the facade. The at least one straight mount-

ing screw chamber is therefore particularly advantageous for adjusting the installation of the basic profile according to the desired facade cladding and results in higher flexibility.

[0012] In a second aspect, the present invention relates to the use of a basic profile according to claim 16.

[0013] The advantage of this use is that the basic profile can be attached to the underlying wall of the facade, in front of and parallel thereto, while the presence of the at least one angled mounting screw chamber minimizes the chance of the basic profile and thus the facade cladding coming loose. An additional advantage is that the insulation envelope does not need to be interrupted. In addition, this use also results in a fire-safe attachment of the facade cladding.

DESCRIPTION OF THE FIGURES

[0014]

Figure 1 shows a cross-sectional view of a basic profile according to an embodiment of the present invention.

Figure 2 shows a cross-sectional view of a basic profile according to an alternative embodiment of the present invention.

Figure 3 shows a cross-sectional view of a basic profile according to yet another alternative embodiment of the current invention.

Figure 4 shows a perspective view of a basic profile according to Figure 1 mounted on a vertical profile.

Figure 5 shows a perspective view of a basic profile according to Figure 1, which is mounted without vertical profile, in front of and parallel to insulation material.

Figure 6 shows a perspective view of a basic profile according to Figure 1 mounted under a vertical profile.

DETAILED DESCRIPTION

[0015] Unless otherwise defined, all terms used in the description of the invention, including technical and scientific terms, have the meaning generally understood by those skilled in the technical field of the invention. For a better understanding of the description of the invention, the following terms are explained explicitly.

[0016] In this document, "a" and "the" refer to both the singular and the plural, unless the context presupposes otherwise. For example, "a segment" means one or more segments.

[0017] The terms "comprise," "comprising," "consist of," "consisting of," "provided with," "include," "including,"

"contain," "containing," are synonyms and are inclusive or open terms that indicate the presence of what follows, and which do not exclude or prevent the presence of other components, characteristics, elements, members, steps, as known from or disclosed in the prior art.

[0018] Quoting numeric intervals by the endpoints includes all integers, fractions, and/or real numbers between the endpoints, including those endpoints.

[0019] In the context of this document, substantially parallel means that two directions form an angle of at most 5°, preferably at most 4°, more preferably at most 3°, even more preferably at most 2°, and even more preferably at most 1°.

[0020] In the context of this document, a chamber is a space in an extruded profile. The extruded profile extends in a longitudinal direction. The chamber is not necessarily closed at an end of the extruded profile. The chamber is bounded by side walls. The side walls extend in a longitudinal direction. The chamber is an open chamber if a side wall is partially interrupted, for example by an opening for receiving a push-in rivet through the opening in the chamber. The chamber is a closed chamber if all side walls in a transverse section of the extruded profile form a closed perimeter. A transverse section is in a plane perpendicular to the longitudinal direction.

[0021] In the context of this document, a half-space is a subset of a three-dimensional space, wherein all points of the subset are located on the same side of a plane that bounds the half-space. The half-space is a closed half-space if the points in the said plane likewise belong to the half-space.

[0022] In the context of this document, a perpendicular bisector plane is a plane that stands perpendicular to a surface and wherein the perpendicular bisector plane cuts said surface into two equal halves.

[0023] In the context of this document, a ventilated facade is a facade with a free space between an underlying wall of the ventilated facade and facade cladding that is attached to the underlying wall. This provides ventilation between the facade cladding and the underlying wall, allowing it to dry. In an insulated and ventilated facade, the mentioned free space is between insulation material on the underlying wall and the facade cladding, so that the insulation material can dry.

[0024] In a first aspect, the invention concerns a basic profile for attaching facade cladding to insulated and/or ventilated facades.

[0025] The basic profile is an extruded profile. The basic profile is preferably a metal profile, more preferably an aluminum profile. A non-limiting example is an aluminum 6060 alloy. Alternatively, the basic profile is a profile made of fire-retardant plastic. The basic profile extends in a longitudinal direction. The basic profile comprises a mounting surface for the attachment of facade cladding. The mounting surface is suitable for gluing and/or screwing and/or nailing facade cladding to the mounting surface. Non-limiting examples of facade cladding are metal wall panels, corrugated sheets, wooden planks and

boards, plastic planks and boards, slates, etc.

[0026] According to a preferred embodiment, the basic profile comprises at least one angled mounting screw chamber for receiving a mounting screw. A mounting screw is a screw suitable for attaching the basic profile to an underlying wall of an insulated and/or ventilated facade. In the case of an insulated facade, the screw is suitable for attaching the basic profile through insulation material, such as, for example, insulation boards, to the underlying wall of the insulated facade. The mounting screw is in that case consequently long enough to penetrate both through the insulation material and into the underlying wall of the insulated facade. The mounting screw preferably comprises a plug for securing the mounting screw in the said wall.

[0027] The at least one angled mounting screw chamber lies in a first half-space. The first half-space is bounded by the mounting surface. It is clear that this means that the first half-space is bounded by a plane parallel to the mounting surface, with the mounting surface lying in said plane. The first half-space is a closed half-space. The at least one angled mounting screw chamber is preferably a closed chamber. This is advantageous for a sturdy structure and limited deformation of the basic profile. This is also advantageous for a secure anchoring of the basic profile in the underlying wall of the insulated and/or ventilated facade using the mounting screws. The at least one angled mounting screw chamber comprises a support surface for supporting a screw head of the mounting screw. The support surface is thus the surface against which the screw head rests after the mounting screw is screwed in. An angle between the mounting surface of the at least one angled mounting screw chamber and the mounting surface is at least 15° and at most 45°. The mentioned angle is measured in a transverse section of the basic profile. A transverse section is in a plane perpendicular to the longitudinal direction of the basic profile. It is clear that if the support surface and the mounting surface do not touch each other, the said angle is an angle between two intersecting lines that lie in the extension of the support surface and the mounting surface. The at least one angled mounting screw chamber is angled by the mentioned angle.

[0028] The angle between the support surface of the at least one angled mounting screw chamber and the mounting surface is preferably at least 18°, more preferably at least 21°, even more preferably at least 24° and even more preferably at least 27°.

[0029] The angle between the support surface of the at least one angled mounting screw chamber and the mounting surface is preferably at most 42°, more preferably at most 39°, even more preferably at most 36° and even more preferably at most 33°.

[0030] The angle between the support surface of the at least one angled mounting screw chamber and the mounting surface is most preferably 30°.

[0031] The basic profile is advantageous because it can be mounted in a horizontal position on an underlying

wall of an insulated and/or ventilated facade, in front of and parallel thereto. This means that the basic profile is placed in front of the underlying wall and parallel to the underlying wall and is attached to the underlying wall. In the case of an insulated facade, the basic profile is preferably placed at a distance from the insulation material, so that there is a ventilation gap behind the facade cladding and so that the facade is also a ventilated facade. By horizontal position is meant that the longitudinal direction of the basic profile is substantially parallel with a horizontal line. The at least one angled mounting screw chamber ensures that the mounting screw can be automatically screwed upwards at an angle of at least 15° and at most 45° into the underlying wall of the insulated and/or ventilated facade. In the case of an insulated facade, the mounting screw can be automatically fastened upwards at an angle of at least 15° and at most 45° through the insulating material into the underlying wall. This angle ensures optimal attachment of the basic profile to the underlying wall of the insulated and/or ventilated facade, thereby minimizing the chance of the basic profile and thus the facade cladding coming loose. The angle at which the mounting screw is screwed into the facade does not need to be measured, which results in a huge time saving during installation. It also avoids the use of a less optimal angle when screwing down the basic profile. It is particularly advantageous that no elements, such as L-shaped brackets, need to be placed directly onto the underlying wall of the facade, again saving installation steps and preventing the insulation envelope from being repeatedly interrupted.

[0032] According to an embodiment, the at least one angled mounting screw chamber is a closed chamber. Preferably, the at least one angled mounting screw chamber comprises a second surface substantially parallel to the support surface of the at least one angled mounting screw chamber, whereby the support surface and the second surface are opposing side walls of the closed chamber. This is particularly advantageous because when drilling a hole through the at least one angled mounting screw chamber for receiving and passing through a mounting screw, a drill can be placed perpendicular to the support surface and perpendicular to the second surface, making the positioning of the drill easier and reducing the chance that when reaching the second surface, the drill will shift, causing the mounting screw to not be screwed into the underlying wall at the desired angle.

[0033] According to an embodiment, the at least one angled mounting screw chamber comprises holes in the support surface for receiving mounting screws. The holes are preferably arranged at regular intervals in the one angled mounting screw chamber in the longitudinal direction of the profile. It is clear that in the case of a second surface, as in a previously described embodiment, the holes for receiving the mounting screws are also provided in the second surface. The holes are pre-drilled or punched. Preferably, the holes are punched. This embo-

diment is advantageous because no holes need to be drilled in the basic profile, which saves time. Additionally advantageous is that the holes serve as a guide for a drill when drilling into the underlying wall of the facade and any insulation material.

[0034] According to an embodiment, the support surface of the at least one angled mounting screw chamber comprises a groove. The groove is preferably a V-shaped groove. The groove extends in the longitudinal direction of the basic profile. The groove is advantageous for correctly positioning a drill on the support surface while drilling a hole for receiving and passing through the mounting screw through the at least one angled mounting screw chamber, as described in a previously described embodiment. When the at least one angled mounting screw chamber is a closed chamber, the second surface opposite the support surface of the at least one angled mounting screw chamber preferably comprises a similar groove. The groove in the support surface and the second surface are preferably aligned.

[0035] According to a preferred embodiment, the basic profile comprises a first and a second angled mounting screw chamber. The angle between the mounting surface of the first angled mounting screw chamber and the mounting surface, and the angle between the mounting surface of the second angled mounting screw chamber and the mounting surface are as previously described at least 15° and at most 45° but are measured in an opposite sense. This embodiment is advantageous for securing the basic profile in a substantially horizontal direction. The basic profile can be oriented in two opposite senses. In one sense, the first angled mounting screw chamber and in the opposite sense, the second angled mounting screw chamber can be used to automatically drive the mounting screw at an upward angle of at least 15° and at most 45° into the underlying wall of the insulated and/or ventilated facade. This simplifies the fastening of the basic profile.

[0036] According to a preferred embodiment, the basic profile is symmetrical with respect to a perpendicular bisector plane on the mounting surface. The perpendicular bisector plane is parallel to the longitudinal direction of the basic profile. This embodiment is particularly advantageous for securing the basic profile in a substantially horizontal direction, wherein the basic profile can be oriented in two opposite senses. This embodiment automatically comprises the features of a previously described embodiment wherein the basic profile comprises a first and a second angled mounting screw chamber.

[0037] According to a further embodiment, the mounting surface comprises a groove. The groove extends in the longitudinal direction of the basic profile. The groove lies in the perpendicular bisector plane. The groove is advantageous for aligning the basic profile. The groove is a reference when placing and aligning multiple basic profiles, for example, if multiple basic profiles are to be attached, regularly spaced, to an underlying wall of an insulated and/or ventilated facade, in front of and parallel

thereto, with or without the use of vertical profiles. The groove is additionally advantageous for aligning the facade cladding relative to the groove, thereby allowing a continuous gap between adjacent panels or boards of the facade cladding, for example. The groove is also advantageous for the attachment of facade cladding using, for example, screws or nails to the mounting surface. The groove makes a drill, screw or nail less likely to slip away during drilling, screwing or nailing through the mounting surface.

[0038] According to a preferred embodiment, the support surface of the at least one angled mounting screw chamber is at a distance from the mounting surface for a recessed placement of the mounting screw with respect to the mounting surface. This is advantageous because in this way the screw head of the mounting screw, after screwing down the basic profile, lies completely in the first half-space, so that the mounting screw does not hinder attaching facade cladding to the mounting surface.

[0039] According to a preferred embodiment, the basic profile comprises at least one straight mounting screw chamber for receiving a mounting screw. A mounting screw is as previously described. The at least one straight mounting screw chamber is situated in the first half-space, bounded by the mounting surface. The at least one straight mounting screw chamber is preferably a closed chamber. This is advantageous for a sturdy structure and limited deformation of the basic profile. This is also advantageous for a secure anchoring of the basic profile in the insulated and/or ventilated facade using the mounting screws. The at least one straight mounting screw chamber comprises a support surface for supporting a screw head of the mounting screw. The support surface is thus the surface against which the screw head rests after the mounting screw is screwed in. The support surface of the at least one straight mounting screw chamber is substantially parallel to the mounting surface. The at least one straight mounting screw chamber is straight because the support surface is substantially parallel with the mounting surface, causing the at least one straight mounting screw chamber to extend perpendicular to the mounting surface.

[0040] The at least one straight mounting screw chamber is advantageous for securing the basic profile in a substantially horizontal position to a vertical profile that is attached to an underlying wall of an insulated and/or ventilated facade, in front of and parallel thereto. The basic profile can thus be simultaneously attached with mounting screws in the angled mounting screw chamber to the underlying wall of the facade and with screws in the straight mounting screw chamber to the vertical profile. This is particularly advantageous if more space between the insulation material and the facade cladding is required. Additionally, the basic profile can be further secured to the underlying wall of the facade with mounting screws, either when attached with or without vertical profiles, which are screwed transversely into the underlying wall of the facade, resulting in a very secure anchor-

ing of the basic profile to the underlying wall of the insulated and/or ventilated facade. The at least one straight mounting screw chamber also allows the basic profile to be attached in a vertical position to the underlying wall of the insulated and/or ventilated facade, whereby mounting screws in the at least one straight mounting screw chamber are screwed into the underlying wall of the facade both transversely and at an angle. In this case, however, it is necessary to measure the angle at which the mounting screw is screwed into the underlying wall of the facade. The at least one straight mounting screw chamber is thus particularly advantageous for adjusting the installation of the basic profile based on a desired facade cladding and results in greater flexibility.

[0041] According to a further embodiment, the support surface of the at least one straight mounting screw chamber is at a distance from the mounting surface for a recessed placement of the mounting screw with respect to the mounting surface. This is advantageous because in this way the screw head of the mounting screw, after screwing down the basic profile, lies completely in the first half-space, so that the mounting screw does not hinder attaching facade cladding to the mounting surface.

[0042] According to a preferred embodiment, the at least one straight mounting screw chamber, viewed according to a transverse direction of the basic profile, is situated closer to an outer side of the basic profile than the at least one angled mounting screw chamber. This is advantageous because this allows the basic profile to have the most uniform possible shapes. This is particularly advantageous in combination with an embodiment described below, wherein the basic profile comprises at least one push-in rivet chamber, because the at least one push-in rivet chamber can be placed between the at least one angled mounting screw chamber and the at least one straight mounting screw chamber, thus obtaining a basic profile with limited dimensions and therefore weight.

[0043] According to an embodiment, the at least one straight mounting screw chamber is a closed chamber. Preferably, the at least one straight mounting screw chamber comprises a second surface substantially parallel to the support surface of the at least one straight mounting screw chamber, whereby the support surface and the second surface are opposing side walls of the closed chamber. This is particularly advantageous because when drilling a hole through the at least one straight mounting screw chamber for receiving and passing through a mounting screw, a drill can be placed perpendicular to the support surface and perpendicular to the second surface, making the positioning of the drill easier and reducing the chance that when reaching the second surface, the drill will shift, causing the mounting screw to not be screwed perpendicularly into the underlying wall.

[0044] According to an embodiment, the at least one straight mounting screw chamber comprises holes in the support surface for receiving mounting screws. The holes are preferably arranged at regular intervals in the one

straight mounting screw chamber in the longitudinal direction of the profile. It is clear that in the case of a second surface, as in a previously described embodiment, the holes for receiving the mounting screws are also provided in the second surface. The holes are pre-drilled or punched. Preferably, the holes are punched. This embodiment is advantageous because no holes need to be drilled in the basic profile, which saves time. Additionally advantageous is that the holes serve as a guide for a drill when drilling into the underlying wall of the facade and any insulation material.

[0045] According to an embodiment, the support surface of the at least one straight mounting screw chamber comprises a groove. The groove is preferably a V-shaped groove. The groove extends in the longitudinal direction of the basic profile. The groove is advantageous for correctly positioning a drill on the support surface while drilling a hole for receiving and passing through the mounting screw through the at least one straight mounting screw chamber, as described in a previously described embodiment. When the at least one straight mounting screw chamber is a closed chamber, the second surface opposite the support surface of the at least one straight mounting screw chamber preferably comprises a similar groove. The groove in the support surface and the second surface are preferably aligned.

[0046] According to a preferred embodiment, the basic profile comprises at least one push-in rivet chamber for receiving a push-in rivet. A push-in rivet is preferably a plastic rivet with a flat head and with deformable rings or a spiral-shaped protrusion around the rivet, to form barbs. The at least one push-in rivet chamber is located in the first half-space, bounded by the mounting surface. The at least one push-in rivet chamber comprises an opening for receiving the push-in rivet. The opening is a slot that extends in the longitudinal direction of the basic profile. There are teeth in the at least one push-in rivet chamber for gripping the push-in rivet. The teeth are particularly advantageous in combination with a plastic rivet with deformable rings or a spiral-shaped protrusion around the rivet. The teeth and the deformable rings or the spiral-shaped protrusion engage with each other and prevent the push-in rivet from falling out of the at least one push-in rivet chamber. The at least one push-in rivet chamber is advantageous for attaching a facade membrane to the basic profile. No special tools are required and the facade membrane can be easily clamped between the push-in rivet and the basic profile.

[0047] According to a further embodiment, there are upright walls along the opening for receiving the push-in rivet for a recessed placement of the push-in rivet. It is clear that the upright walls for this purpose are higher than the flat head of the push-in rivet, at least increased by the thickness of the facade membrane. A free end of the upright walls is level with the mounting surface. This means that after insertion into the at least one push-in rivet chamber, the push-in rivet lies completely in the first half-space and therefore does not hinder the installation

of the facade cladding. An additional advantage is that the upright walls form an additional support point for the facade cladding.

[0048] According to a preferred embodiment, the at least one push-in rivet chamber adjoins the at least one angled mounting screw chamber. Between the at least one push-in rivet chamber and the at least one angled mounting screw chamber an intermediate chamber is formed. The intermediate chamber is preferably as small as possible, so that a total volume and weight of the basic profile remains limited. A wall between the intermediate chamber and the at least one mounting screw chamber is at least partially open. Preferably, the at least one angled mounting screw chamber and the intermediate chamber together form one closed chamber. The mentioned closed chamber can then be regarded as the at least one angled mounting screw chamber. This embodiment is advantageous for obtaining a solid mold for extruding the basic profile. The intermediate chamber is, as previously described, preferably as small as possible. In the mold, the intermediate chamber corresponds to a solid volume. Due to the small dimensions of the intermediate chamber, there is a real risk that this solid volume will break off or be damaged over time due to the high pressure during the extrusion of the basic profile. Because the said wall is at least partially open, the solid volume becomes part of a much larger solid volume of the at least one angled mounting screw chamber, making the mold much stronger and greatly reducing the risk of damage or breakage of the mold.

[0049] According to a preferred embodiment, the basic profile comprises at least one coupling chamber for placing a coupling piece. The at least one coupling chamber has an at least partially rectangular cross-section. A rectangular part of the at least partially rectangular cross-section has a length of at least 15 mm and at most 25 mm. The rectangular part of the at least partially rectangular cross-section has a width of at least 3 mm and at most 7 mm. Longest sides of the rectangular part of the at least partially rectangular cross-section have an uninterrupted length of at least 45% of a total length of the at least partially rectangular cross-section.

[0050] Preferably, the rectangular part of the at least partially rectangular cross-section has a length of at least 16 mm, more preferably at least 17 mm, even more preferably at least 18 mm, and most preferably 19 mm.

[0051] Preferably, the rectangular part of the at least partially rectangular cross-section has a length of at most 24 mm, more preferably at most 23 mm, even more preferably at most 22 mm, and even more preferably at most 21 mm.

[0052] This embodiment is advantageous for coupling basic profiles that are in each other's extension. By incorporating a coupling piece in both the at least one coupling chamber of a first basic profile and a second basic profile, the first basic profile and the second basic profile are coupled with each other. The coupling piece is, for example, a plastic beam-shaped body, wherein the

beam-shaped body comprises ribs for securing the beam-shaped body in the rectangular part of the at least partially rectangular cross-section. The coupling of the first basic profile and the second basic profile is additionally advantageous for aligning the first basic profile and the second basic profile. This embodiment is particularly advantageous when the basic profiles are attached to vertical profiles because a coupling between the first basic profile and the second basic profile does not necessarily have to occur at the height of the vertical profile.

[0053] According to a preferred embodiment, the mounting surface is a side wall of a closed chamber. This is particularly advantageous for obtaining a strong basic profile. By attaching the facade cladding to the mounting surface, large forces can be exerted on the mounting surface, which can deform the basic profile. Due to the closed chamber, deformation of the basic profile is limited as much as possible.

[0054] According to another embodiment, the mentioned closed chamber has a trapezoidal cross-section. A slanted side of the trapezoidal cross-section is a common side between the said closed chamber and the at least one angled mounting screw chamber. This embodiment is advantageous because it allows the at least one angled mounting screw chamber to abut against the closed chamber, allowing a basic profile with reduced dimensions and therefore weight to be obtained.

[0055] According to a preferred embodiment, the basic profile has a wall thickness of at least 1.3 mm and at most 2 mm.

[0056] Preferably, the basic profile has a wall thickness of at least 1.4 mm.

[0057] Preferably, the basic profile has a wall thickness of at most 1.9 mm, more preferably at most 1.8 mm, even more preferably at most 1.7 mm, and most preferably at most 1.6 mm.

[0058] Most preferably, the basic profile has a wall thickness of 1.5 mm.

[0059] A wall thickness of at least 1.4 mm and at most 2 mm is beneficial for obtaining a profile that is strong enough to bear the weight of conventional facade cladding and is also light enough.

[0060] According to a preferred embodiment, walls of the basic profile, which are located on opposite sides of an access to the at least one angled mounting screw chamber and delimit the access, form a cup for drainage when the basic profile is placed horizontally. Access refers both to a space along which a mounting screw enters the at least one angled mounting screw chamber and to a space along which a mounting screw exits the at least one angled mounting screw chamber. In a horizontal placement of the basic profile, water, which flows along the insulation material or along a rear side of the facade cladding, could flow into the access to the at least one angled mounting screw chamber and remain in this access due to the angle of at least 15° and at most 45°. This is possibly detrimental for the facade cladding and the insulation material. Due to the cup shape, the water

can always flow out of the mentioned accesses, so there is no standing water in the basic profile.

[0061] In a second aspect, the invention concerns a use of a basic profile according to the first aspect for attaching facade cladding to an insulated and/or ventilated facade.

[0062] The advantage of this use is that the basic profile can be attached to the underlying wall of the facade, in front of and parallel thereto, while the presence of the at least one angled mounting screw chamber minimizes the chance of the basic profile and thus the facade cladding coming loose. An additional advantage is that the insulation envelope does not need to be interrupted. In addition, this use also results in a fire-safe attachment of the facade cladding.

[0063] In what follows, the invention is described using non-limiting figures that illustrate the invention, and which are not intended to and should not be interpreted as limiting the scope of the invention.

DESCRIPTION OF THE FIGURES

[0064] Figure 1 shows a cross-sectional view of a basic profile according to an embodiment of the present invention.

[0065] The basic profile (1) extends in a longitudinal direction. The longitudinal direction is oriented perpendicular to Figure 1. The basic profile (1) comprises a mounting surface (2) for attaching facade cladding. The mounting surface is a side wall of a closed chamber (4). The closed chamber (4) has a trapezoidal cross-section. Slanted sides of the trapezoidal cross-section are shared with two angled mounting screw chambers (5) for receiving a mounting screw. The two angled mounting screw chambers (5) are each located on an opposite side of the closed chamber (4). The two angled mounting screw chambers (5) are located in a first half-space bounded by the mounting surface (2). The two angled mounting screw chambers (5) comprise a support surface (6) for supporting a screw head of a mounting screw and a second surface (7), substantially parallel to the support surface (6). The support surface (6) forms a 30° angle with the mounting surface (2). The support surface (6) is located at a distance from the mounting surface (2), for a recessed placement of the mounting screw relative to the mounting surface (2). The support surface (6) of the angled mounting screw chambers (5) comprises a V-shaped groove (8). The second surface (7) of the angled mounting screw chambers (5) comprises a V-shaped groove (9) that is aligned with the V-shaped groove (8) in the support surface (6). The basic profile (1) comprises two straight mounting screw chambers (10) for receiving mounting screws. The two straight mounting screw chambers (10) are located in the first half-space. The two straight mounting screw chambers (10) are, as seen in a transverse direction, situated closer to an outer side of the basic profile (1) than the two angled mounting screw chambers (5). The transverse direction is parallel

with the mounting surface and in the plane of Figure 1. The two straight mounting screw chambers (10) comprise a support surface (11) for supporting a screw head of a mounting screw and a second surface (12), substantially parallel to the support surface (11). The support surface (11) of the straight mounting screw chambers (10) is substantially parallel to the mounting surface (2). The support surface (11) of the straight mounting screw chambers (10) is spaced from the mounting surface (2) for a recessed placement of the mounting screw relative to the mounting surface (2). The support surface (11) of the straight mounting screw chambers (10) comprises a V-shaped groove (13). The second surface (12) of the straight mounting screw chambers (10) comprises a V-shaped groove (14) that is aligned with the V-shaped groove (13) in the support surface (11). The basic profile (1) comprises two push-in rivet chambers (15) for receiving a push-in rivet. The two push-in rivet chambers (15) are located in the first half-space. The two push-in rivet chambers (15) comprise an opening (17) for receiving the push-in rivet. There are teeth in the two push-in rivet chambers (15) for gripping the push-in rivet. Along the opening (17) there are upright walls (18) for a recessed placement of the push-in rivet. A free end of the upright walls (18) is level with the mounting surface (2). Between the two push-in rivet chambers (15) and the angled mounting screw chambers (5) there are intermediate chambers (22). A wall between the intermediate chambers (22) and the angled mounting screw chambers (5) is partially opened. This can be considered as if an angled mounting screw chamber (5) and an adjacent intermediate chamber (22) form one large, closed chamber. Between the straight mounting screw chambers (10) and the push-in rivet chambers (15), there is always one coupling chamber (19) for the placement of a coupling piece. The coupling chambers (19) have an at least partially rectangular cross-section. In this embodiment, the coupling chambers (19) have a cross-section that is a fusion of a rectangle and a triangle. The rectangle has a length of 19 mm and a width of 5 mm. One long side has an interrupted part (20). The long side with the interrupted part (20) has an uninterrupted length of 9.5 mm or 50% of the total length of the rectangle. The basic profile (1) is symmetrical with respect to a perpendicular bisector plane on the mounting surface (2). The perpendicular bisector plane is parallel with the longitudinal direction of the basic profile (1). The mounting surface (2) comprises a groove (3) extending in the longitudinal direction of the basic profile (1). The groove (3) lies in the perpendicular bisector plane. Walls (21) of the basic profile (1), which lie on opposite sides of an access to the two angled mounting screw chambers (5) and delimit the access, form a cup for drainage when the basic profile (1) is placed horizontally. As a result, no water remains in these accesses.

[0066] Figure 2 shows a cross-sectional view of a basic profile according to an alternative embodiment of the present invention.

[0067] The basic profile (1) in Figure 2 is very similar to the basic profile (1) in Figure 1. The main differences are that the basic profile (1) in Figure 2 does not comprise a push-in rivet chamber (15) and no coupling chamber (19).

[0068] Figure 3 shows a cross-sectional view of a basic profile according to yet another alternative embodiment of the current invention.

[0069] The basic profile (1) in Figure 3 is very similar to the basic profile (1) in Figure 2. The straight mounting screw chambers (10) do not comprise a second surface (12), resulting in the support surface (11) of the straight mounting screw chambers (10) being located further from the mounting surface (2). Another difference is that only the support surface (6) of the angled mounting screw chambers (5) comprises a groove (8) and not the second surface (7). Likewise different is that on walls of the angled mounting screw chambers (5) and the straight mounting screw chambers (10), protrusions for holding mounting screws have been installed. A final difference is that walls (21) of the basic profile (1), which lie on opposite sides of an access to the two angled mounting screw chambers (5) and delimit the access, do not form a cup for drainage when the basic profile (1) is placed horizontally. This may leave water standing in these accesses.

[0070] Figure 4 shows a perspective view of a basic profile according to Figure 1 mounted on a vertical profile.

[0071] The basic profile (1) corresponds with Figure 1. The vertical profile (23) is attached to an underlying wall of an insulated facade in front of and parallel to the insulation material. The insulation material and the underlying wall are not shown in Figure 4 and the subsequent Figures 5 and 6. The vertical profile (23) is anchored with mounting screws (24) in the underlying wall of the insulated facade. The mounting screws (24) are screwed both transversely into the underlying wall and at an angle of 30° upwards into the underlying wall. The angle of 30° was measured at installation. The basic profile (1) is screwed onto the vertical profile (25) using self-drilling metal screws (23). The basic profile (1) is additionally anchored in the underlying wall with the help of mounting screws (24). Mounting aid screws (24) in the straight mounting screw chambers (10) are screwed transversely into the underlying wall. Mounting aid screws (24) in the angled mounting screw chambers (5) are automatically screwed upwards into the underlying wall at an angle of 30°. In Figure 4, there are also coupling pieces (26) visible with which vertical profiles (23) can be connected to each other. Such coupling pieces (26) are also suitable for coupling basic profiles (1) to each other by placing the coupling pieces (26) in the coupling chambers (19), as shown in Figure 4.

[0072] This embodiment is advantageous when facade cladding is mounted on the mounting surface (2) of the basic profile (1) and more space is needed between the insulation material and the facade cladding.

[0073] Figure 5 shows a perspective view of a basic profile according to Figure 1, which is mounted without

vertical profile, in front of and parallel to insulation material.

[0074] The basic profile (1) corresponds with Figure 1. The basic profile (1) is attached substantially horizontally, in front and parallel to the insulation material, to an underlying wall of an insulated facade. The basic profile (1) is anchored in the underlying wall with the help of mounting screws (24). Mounting aid screws (24) in the straight mounting screw chambers (10) are screwed transversely into the underlying wall. Mounting aid screws (24) in the angled mounting screw chambers (5) are automatically screwed upwards into the underlying wall at an angle of 30°.

[0075] This embodiment is advantageous for a minimal use of profiles, when only a limited space between the facade cladding and the insulation material is required.

[0076] Figure 6 shows a perspective view of a basic profile according to Figure 1 mounted under a vertical profile.

[0077] The basic profile (1) corresponds with Figure 1. The basic profile (1) is attached substantially horizontally, in front and parallel to the insulation material, to an underlying wall of an insulated facade. The basic profile (1) is anchored in the underlying wall with the help of mounting screws (24). Mounting aid screws (24) in the straight mounting screw chambers (10) are screwed transversely into the underlying wall. Mounting aid screws (24) in the angled mounting screw chambers (5) are automatically screwed upwards into the underlying wall at an angle of 30°. A vertical profile (23) is attached to the basic profiles (1) using self-drilling metal screws (25). The vertical profile (23) corresponds to the vertical profile (23) in Figure 4. The vertical profile (23) is additionally anchored with mounting screws (24) in the underlying wall of the insulated facade. The mounting screws (24) are screwed both transversely into the underlying wall and at an angle of 30° upwards into the underlying wall. The angle of 30° was measured at installation. In Figure 6, not only are coupling pieces (26) visible in the vertical profile (23), but also a coupling piece (26) that is comprised in an upper coupling chamber (19) and a coupling piece (26) that is comprised in a lower coupling chamber (19).

[0078] This embodiment is advantageous when facade cladding is attached to the vertical profile (23) and more space between the insulation material and the facade cladding is needed.

[0079] It is clear that the examples in Figure 4, Figure 5 and Figure 6 apply mutatis mutandis to a non-insulated and ventilated facade.

[0080] The numbered elements in the figures are:

1. Basic profile
2. Mounting surface
3. Groove in mounting surface
4. Closed chamber
5. Angled mounting screw chamber
6. Support surface, angled mounting screw chamber

7. Second surface, angled mounting screw chamber
8. Groove support surface, angled mounting screw chamber
9. Groove second surface, angled mounting screw chamber
10. Straight mounting screw chamber
11. Support surface, straight mounting screw chamber
12. Second surface, straight mounting screw chamber
13. Groove support surface, straight mounting screw chamber
14. Groove second surface, straight mounting screw chamber
15. Push-in rivet chamber
16. Teeth push-in rivet chamber
17. Opening push-in rivet chamber
18. Upright walls along push-in rivet chamber opening
19. Coupling chamber
20. Interrupted long side
21. Walls limiting access to angled mounting screw chamber
22. Intermediate chamber
23. Vertical profile
24. Mounting screw
25. Self-drilling metal screw
26. Coupling piece

Claims

1. Basic profile for securing facade cladding to insulated and/or ventilated facades, wherein the basic profile is an extruded profile, wherein the basic profile comprises a mounting surface for mounting facade cladding, **characterized in that** the basic profile comprises at least one angled mounting screw chamber for receiving a mounting screw, wherein the at least one angled mounting screw chamber is located in a first half-space, bounded by the mounting surface, wherein the at least one angled mounting screw chamber comprises a support surface for supporting a screw head of the mounting screw, and wherein an angle between the support surface of the at least one angled mounting screw chamber and the mounting surface is at least 15° and at most 45°.
2. The basic profile according to claim 1, **characterized in that** the basic profile is symmetrical with respect to a bisector perpendicular to the mounting surface, wherein the perpendicular bisector plane is parallel to a longitudinal direction of the basic profile.
3. The basic profile according to claim 2, **characterized in that** the mounting surface comprises a groove, wherein the groove extends in the longitudinal direction of the basic profile and wherein the

groove lies in the perpendicular bisector plane.

4. The basic profile according to any of the preceding claims 1-3, **characterized in that** the support surface of the at least one angled mounting screw chamber is at a distance from the mounting surface, for a recessed placement of the mounting screw relative to the mounting surface.
5. The basic profile according to any of the preceding claims 1-4, **characterized in that** the basic profile comprises at least one straight mounting screw chamber for receiving a mounting screw, wherein the at least one straight mounting screw chamber is located in the first half-space, bounded by the mounting surface, wherein the at least one straight mounting screw chamber comprises a support surface for supporting a screw head of the mounting screw, and wherein the support surface of the at least one straight mounting screw chamber is substantially parallel with the mounting surface.
6. The basic profile according to claim 5, **characterized in that** the support surface of the at least one straight mounting screw chamber lies at a distance from the mounting surface, for a recessed placement of the mounting screw relative to the mounting surface.
7. The basic profile according to any of the preceding claims 5-6, **characterized in that** the at least one straight mounting screw chamber, viewed along a transverse direction of the basic profile, is located closer to an outer side of the basic profile than the at least one angled mounting screw chamber.
8. The basic profile according to any of the preceding claims 1-7, **characterized in that** the basic profile comprises at least one push-in rivet chamber for receiving a push-in rivet, wherein the at least one push-in rivet chamber is situated in the first half-space, bounded by the mounting surface, wherein the at least one push-in rivet chamber comprises an opening for receiving the push-in rivet, and wherein, in the at least one push-in rivet chamber, there are teeth for gripping the push-in rivet.
9. The basic profile according to claim 8, **characterized in that** along the opening for receiving the push-in rivet there are upright walls for a recessed placement of the push-in rivet, wherein a free end of the upright walls is level with the mounting surface.
10. The basic profile according to any of the preceding claims 8-9, **characterized in that** the at least one push-in rivet chamber borders the at least one angled mounting screw chamber, with an intermediate chamber being formed between the at least one

push-in rivet chamber and the at least one angled mounting screw chamber, wherein a wall between the intermediate chamber and the at least one angled mounting screw chamber is at least partially open.

5

11. The basic profile according to any of the preceding claims 1-10, **characterized in that** the basic profile comprises at least one coupling chamber for placing a coupling piece, wherein the at least one coupling chamber has an at least partially rectangular cross-section, wherein a rectangular part of the at least partially rectangular cross-section has a length of at least 15 mm and at most 25 mm and a width of at least 3 mm and at most 7 mm, and wherein longest sides of the rectangular part of the at least partially rectangular cross-section have an uninterrupted length of at least 45% of a total length of the at least partially rectangular cross-section.
12. The basic profile according to any of the preceding claims 1-11, **characterized in that** the mounting surface is a side wall of a closed chamber.
13. The basic profile according to claim 12, **characterized in that** said closed chamber has a trapezoidal cross-section, wherein a slanted side of the trapezoidal cross-section is a common side between the closed chamber and the at least one angled mounting screw chamber.
14. The basic profile according to any of the preceding claims 1-13, **characterized in that** the basic profile has a wall thickness of at least 1.3 mm and at most 2 mm.
15. The basic profile according to any of the preceding claims 1-14, **characterized in that** walls of the basic profile, which lie on opposite sides of an access to the at least one angled mounting screw chamber and delimit the access, form a cup for drainage with a horizontal placement of the basic profile.
16. Use of a basic profile according to any of the preceding claims 1-15 for attaching facade cladding to an insulated and/or ventilated facade.

10

15

20

25

30

35

40

45

50

55

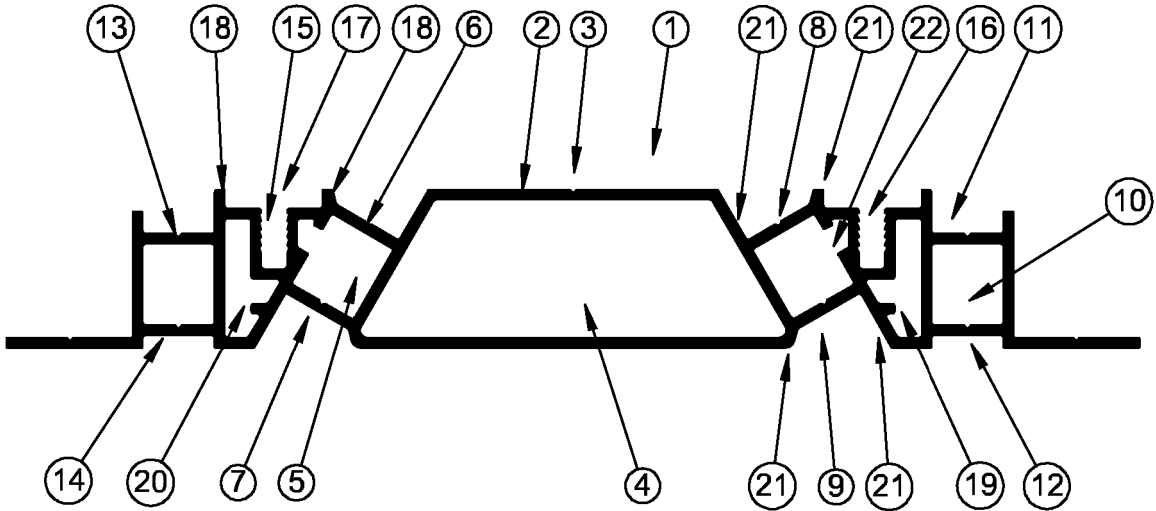


FIG. 1

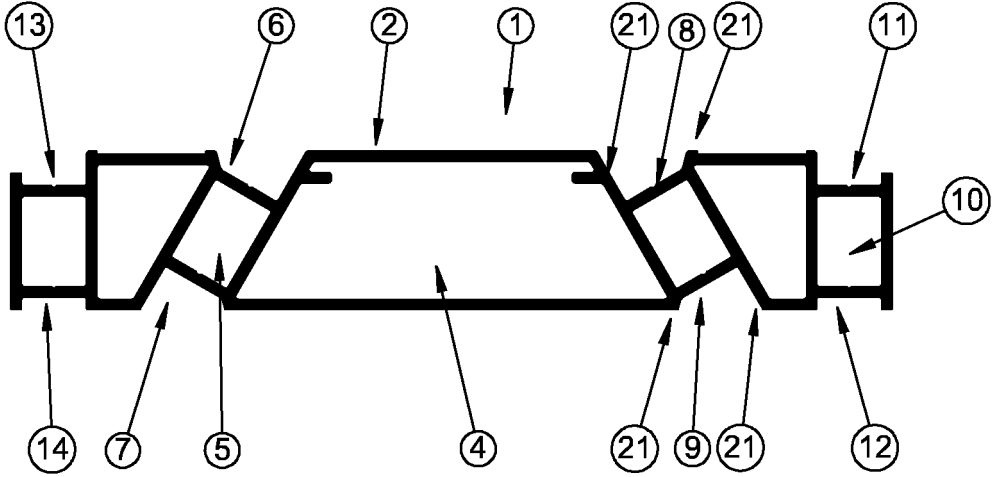


FIG. 2

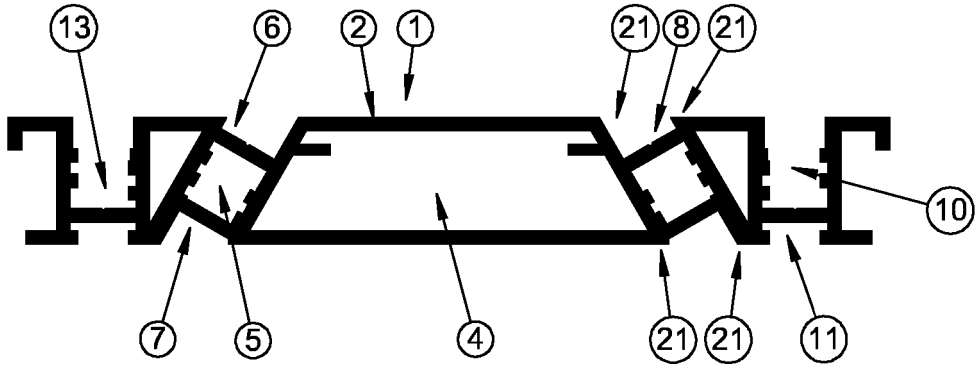


FIG. 3

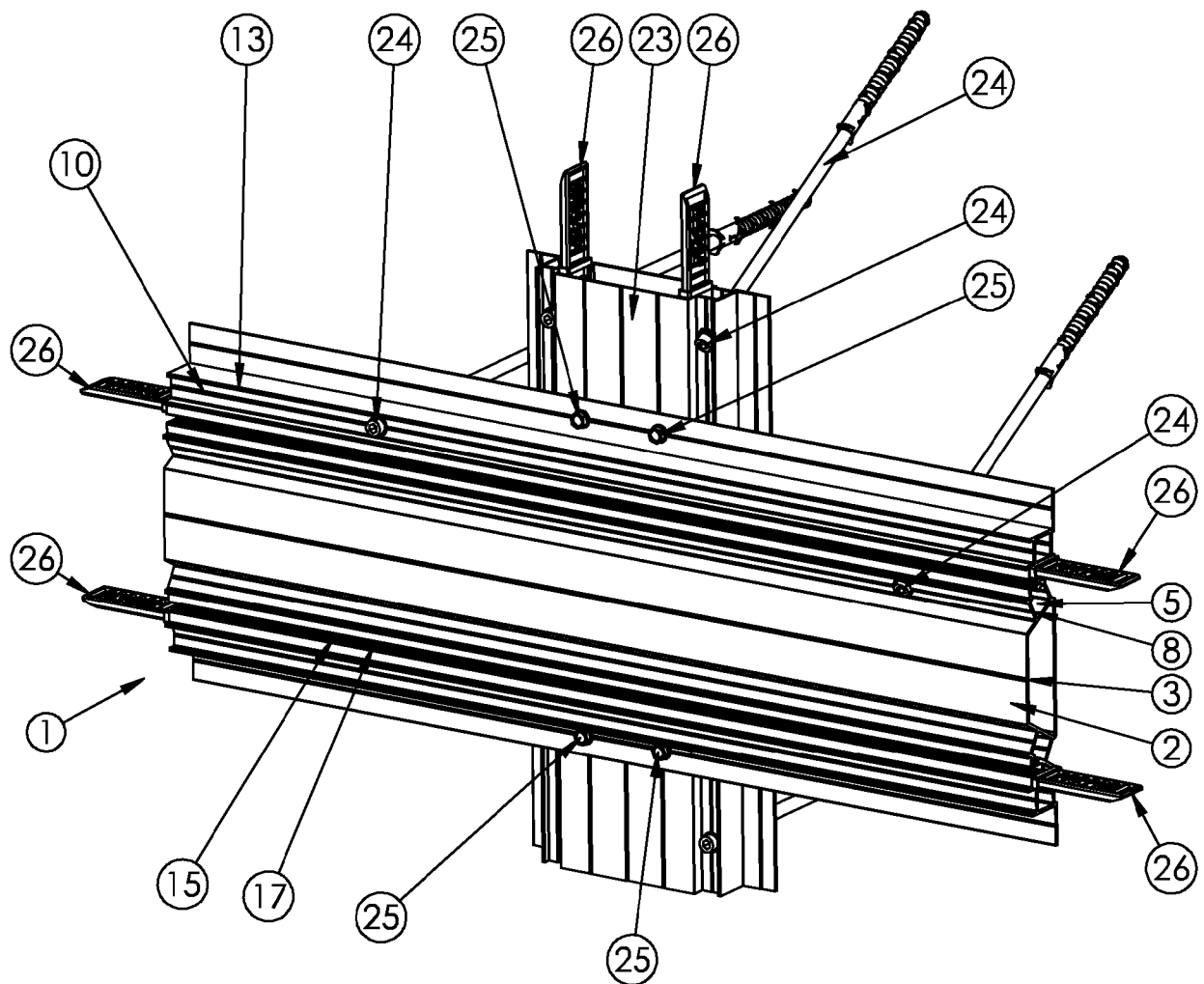


FIG. 4

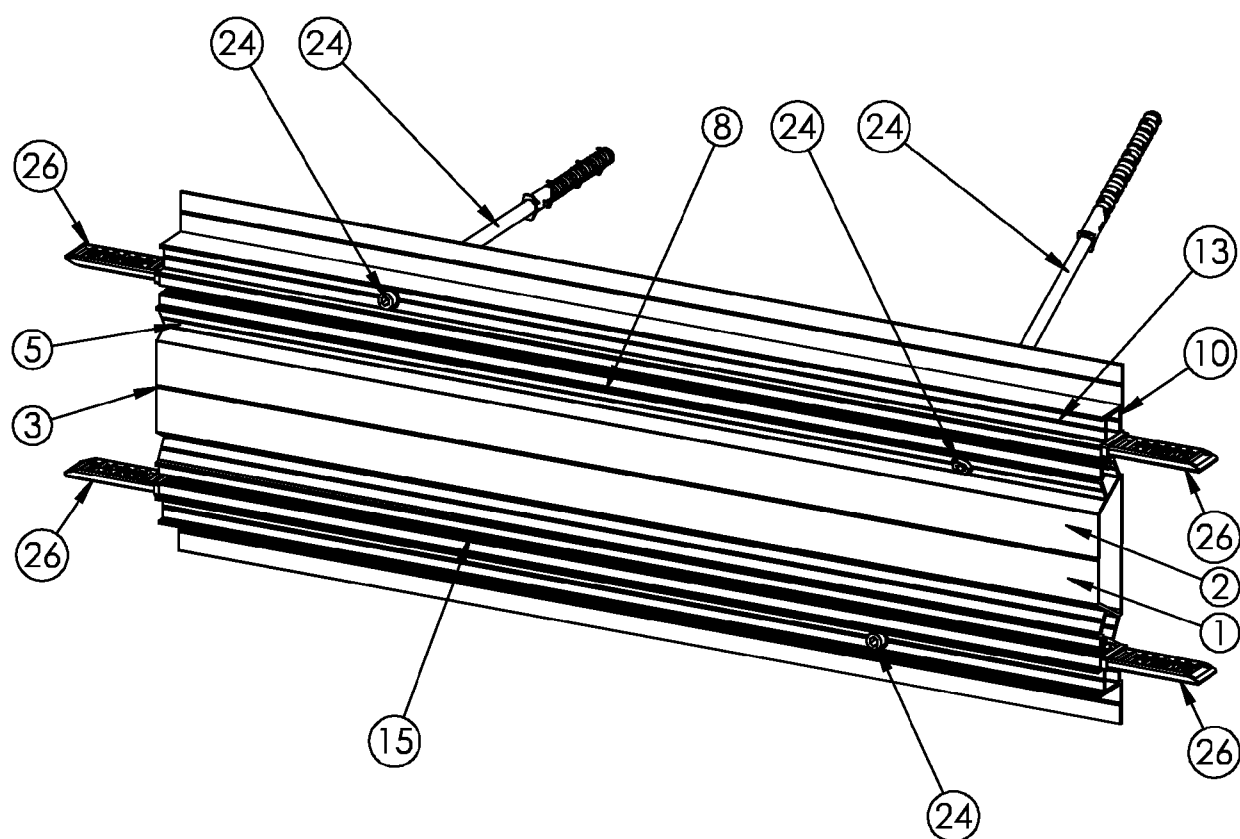


FIG. 5

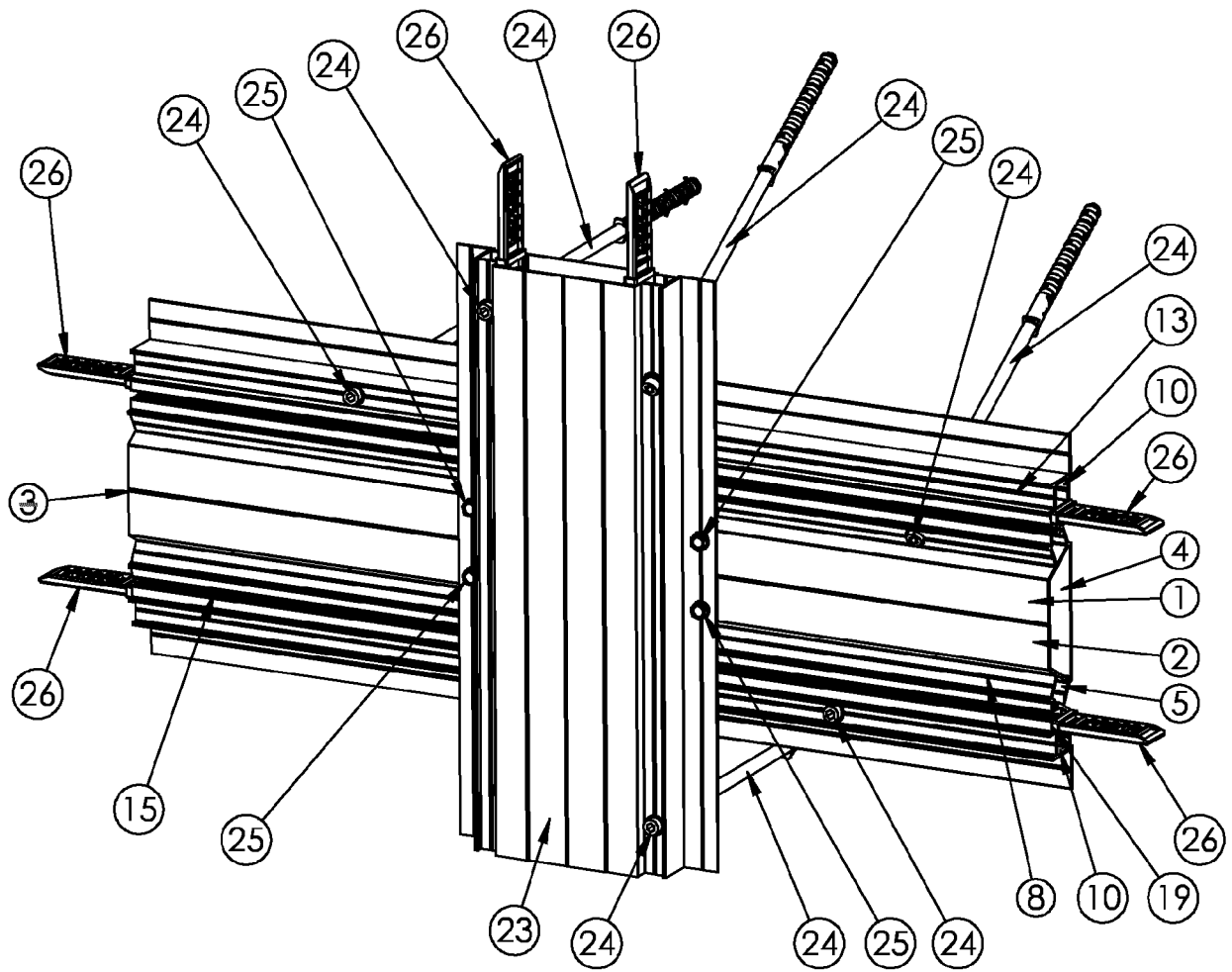


FIG. 6



EUROPEAN SEARCH REPORT

Application Number

EP 24 19 2262

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	NL 2 010 093 C2 (ES) 9 July 2014 (2014-07-09)	1-6,12, 14-16	INV. E04F13/00
Y	* figures 1, 2 *	11	E04B1/76
A		7-10,13	E04F13/08
Y	EP 2 309 072 B1 (ALMET ENGINEERING S R L [IT]) 4 May 2016 (2016-05-04) * figure 1 *	11	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04F E04B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		2 December 2024	Fournier, Thomas
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 24 19 2262

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

02 - 12 - 2024

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
NL 2010093	C2	09-07-2014	NONE

EP 2309072	B1	04-05-2016	EP 2309072 A1 13-04-2011
		IT 1395903 B1	26-10-2012

15

20

25

30

35

40

45

50

55

EPO FORM P0459

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

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

- EP 2309072 A [0004]
- NL 2010093 [0005]