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(54) **MOUNTING BRACKET FOR MOUNTING A CLADDING TO A WALL, AND METHOD THEREFOR**

(57) Mounting bracket for mounting a cladding to a wall comprising a wall plate arranged to be fixed to the wall substantially in parallel with said wall and a first and a second bracket arm extending substantially transversely from said wall plate.

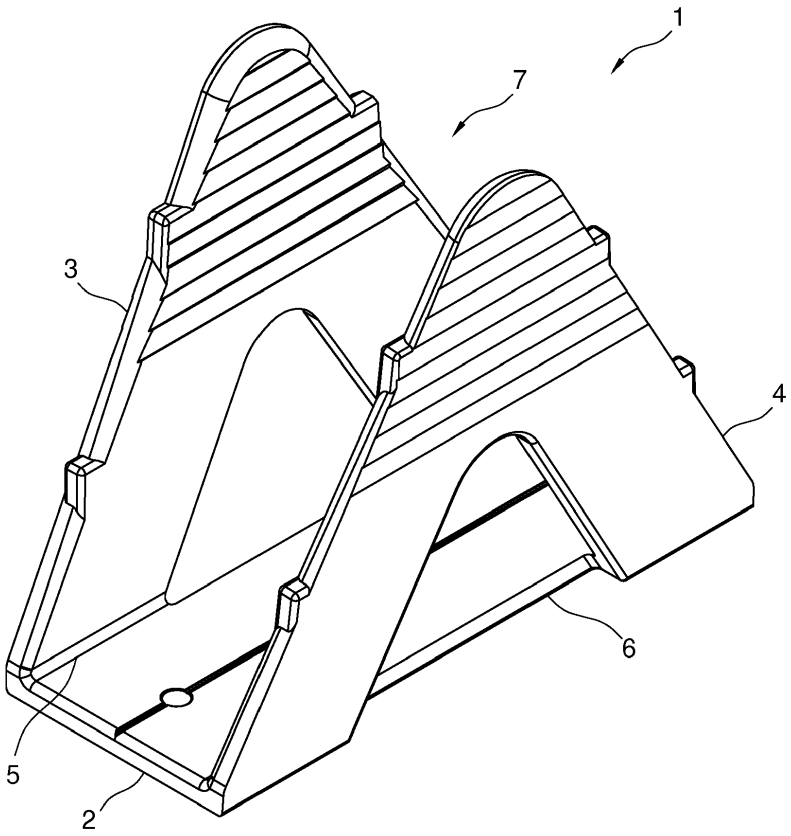

Fig. 1

EP 3 572 598 A1

Description

[0001] The invention relates to a mounting bracket for mounting a cladding to a wall.

[0002] Such mounting brackets are generally known. One or more of such mounting brackets can be mounted to a wall, while a cladding can then be attached to one or more of the mounting brackets. They are generally made out of metal. By using these mounting brackets, an open space can be created between the wall and the cladding, which can be beneficial in avoiding problems with humidity and/or in improving isolation of the wall. In the open space between the wall and the cladding, additional isolation can be added if necessary. Such a mounting bracket often includes a wall plate arranged to engage the wall and to be fixed to the wall substantially in parallel with said wall and a first and a second bracket arm extending substantially transversely from said wall plate.

[0003] As the cladding in general needs to be mounted substantially in parallel with the wall, a problem with known prior art systems may be that the shape of the mounting bracket is rather complicated, including various angled attachments between the wall engaging parts, the space creating members, such as the brackets arms, and/or the cladding engaging parts. As a result, the mounting of the mounting brackets to the wall, and/or the mounting of the cladding to the mounting brackets may be rather cumbersome and tale relatively long, which increases installation costs. At the same time, manufacturing of the mounting brackets may be relatively complicated, and therefore also be relatively costly.

[0004] It is an aim of the present invention to solve or alleviate one or more of the above-mentioned problems. In particular, the invention aims at providing an improved mounting bracket which can be mounted to a wall relatively quickly. It is also an aim of the invention to provide a reliable yet relatively cost-efficient mounting bracket.

[0005] To this aim, according to a first aspect of the present invention, there is provided a mounting bracket characterized by the features of claim 1. In particular, the mounting bracket for mounting a cladding to a wall comprises a wall plate arranged to be fixed to the wall substantially in parallel with said wall and a first and a second bracket arm extending substantially transversely from said wall plate. A connection of said first bracket arm to the wall plate is substantially in parallel with and spaced apart from a connection of said second bracket arm to said wall plate such that a beam receiving space is present between said two bracket arms. As the wall plate is arranged to be mounted substantially in parallel with the wall, the wall plate can engage the wall, or any insulation plates fixed to the wall, over a relatively large surface, thus providing stable attachment for the mounting bracket to the wall. Additionally, the substantially parallel bracket arms providing a receiving space for a support beam there between, contribute to a mounting bracket which can be mounted relatively easily. At the same time, the relatively simple shape of the mounting bracket can lead to a relatively cost-efficient manufacturing of the mounting bracket.

[0006] The mounting bracket is preferably made of plastic, preferably of recycled plastic. The plastic can for example be polypropylene (PP) or polyethylene (PE), which material can provide a relatively solid mounting bracket, which is relatively easy to manufacture, thus reducing costs. Especially the use of recycled plastic can reduce manufacturing costs. Contrary to metal mounting brackets as known in the prior art, a mounting bracket in plastic has the advantage to be less sensitive to for example humidity, or pollution, possibly resulting in corrosion of the bracket. Additionally, plastic is a better isolator than metal. A mounting bracket entirely made of plastic can avoid thermal bridges between the cladding and the wall to be cladded. Moreover, the use of plastic mounting brackets allows a relatively quick mounting of support beams, which can for example be wooden support beams, to the mounting brackets, for example by screwing, bolting, and/or by using pneumatic, electric, or gas nailing machines, which is more difficult or even impossible with metal mounting brackets.

[0007] The mounting bracket is preferably made as a single piece, as any kind of parts including for example joints, seams or welds, can weaken the strength of the mounting bracket. In case of a plastic mounting bracket, the mounting bracket may be for example be made by extrusion or may alternatively be injection-moulded. By providing a single piece plastic mounting bracket, combination of different types of material can be avoided, which can reduce manufacturing as well as mounting costs. This is contrary to prior art mounting brackets, which are sometimes made of a combination of metal and plastic, resulting in a relatively complicated manufacturing and mounting of the mounting bracket, and loosing the strength of a single piece mounting bracket.

[0008] Advantageously, the first bracket arm and the second bracket arm have a substantially triangular shape, in particular a substantially isosceles shape. This shape can provide a relatively broad attachment basis of the first and second bracket arm to the wall plate, while at the same time providing a smaller top, which can result in a relatively good support and balance of the weight of the support beams, and at the same time allows easy inserting of a support beam into the beam receiving space between the first and second bracket arm. Also, providing a substantially triangular shape of the bracket arms, may provide a relatively stiff support, preventing downwards bending or torsion due to weight and/or other loads, such as environmental loads. The top of the triangular shape at a distance of the wall plate may for example be rounded off.

[0009] The first and/or second bracket arm may be provided with lines or grooves that are approximately parallel to the wall plate. These lines or grooves provide an easy indication of distance between the wall plate and the support beam and/or the cladding which distance can vary

depending on the choice of the isolation thickness. After fixing of the mounting bracket to the wall, the required isolation plates can be mounted to the wall. A support beam can then be mounted to the wall bracket at the desired position such that the isolation fits between the wall bracket and the cladding. Alternatively, the support beams can be mounted at a determined distance, and the isolation panels can be fitted inbetween. After mounting of the support beams to the wall bracket, the bracket arms can be cut or sawn beyond the support beam, preferably at such a predetermined line or groove, to shorten the bracket arm to the required distance. As such, such lines or groove may provide for an easy indication of the positioning of a support beam and/or may provide for an easy shorting of the bracket arms.

[0010] The first and/or second bracket arm may additionally comprise a cut-out, which may be similar in shape in a geometrical sense to the shape of the first and/or second bracket arm, i.e. the cut-out and the bracket arm may have the same shape except for a rescaling, such that one of them can be rescaled, repositioned, and reflected, so as to coincide precisely with the other. The cut-out may allow for savings in material and/or weight.

[0011] An angle between the first and/or second bracket arm and the wall plate may include a substantially right angle or an angle which is smaller than a substantially right angle, for example to be able to exert a clamping force on a support beam in the beam receiving space. During a manufacturing process of the bracket arm, said angle may also be larger than a substantially right angle, for example to facilitate releasing from the mould. In that case, the angle may become a substantially right angle due to a drop in temperature and crimping and setting of the material of the mounting bracket. Advantageously, the bracket arms are at a right angle with the wall plate when in use, in order to facilitate receiving of a support beam between the bracket arms.

[0012] According to a further aspect of the invention, there is provided a method for mounting a cladding to a wall. This method can provide one or more of the above-mentioned advantages. By providing such a method, in particular the aligning of the support beam with respect to the bracket can be more easy, for example due to the lines or grooves. Also, by providing the bracket in a plastic material, easy cutting of the part of the bracket extending the support beam is possible. As such, the bracket can be easily made to fit the size of the support beam.

[0013] In a further aspect, a system comprising a support beam and at least one bracket is provided. Preferably, the support beam is a wooden support beam. By providing a wooden support beam, the fastening elements such as a screw or nail, can be easily inserted through the bracket arm into the support beam. Advantageously, a gas nailing gun can be used to automatically punch nails into the beam through the bracket arm. Alternatively, the support beam can be made of another material, such as a plastic composite material allowing easy insertion of a fastening element as well.

[0014] Advantageously, the support beam is being fit into the bracket between the bracket arms such that for example an insolation panel can be fitted between the support beam and the wall. In another example, the bracket can be mounted to an insulation panel and the support beam can be positioned in the bracket with or without any additional isolation material inbetween. Aligning of the support beam with respect to the bracket can be easily done by the lines or grooves provided on the bracket arms. After mounting the support beam to the bracket, the bracket arms of the mounting bracket can be cut off flush with the support beam. Advantageously, the bracket arms are cut off, such that, after cutting, the bracket arms extend until a front side - facing away from the wall - of the support beam. The bracket arm then becomes approximately even with the front side of the support beam. The front side of the support beam can be considered the side of the support beam facing away from the wall, so when standing before the wall, the user faces the front side. The cladding is fastened to the front side of the support beam.

[0015] The present invention will be further elucidated with reference to figures of exemplary embodiments. Corresponding elements are designated with corresponding reference signs.

Figure 1 shows a perspective view on a first embodiment of a mounting bracket according to the invention;
Figure 2 shows a schematic side view on the mounting bracket of Figure 1;
Figure 3 shows a schematic cross sectional view along line A of Figure 2;
Figure 4 shows a schematic top view on the mounting bracket of Figure 1;
Figure 5 shows a schematic perspective view on a second embodiment of a mounting bracket according to the invention;
Figure 6 shows a schematic perspective view on a third embodiment of a mounting bracket according to the invention;
Figure 7 shows a perspective view on a pair of mounting brackets shown in Figure 1;
Figure 8 shows a perspective view on a wall provided with two support beams attached to four mounting brackets according to the embodiment of Figure 1;
Figure 9 shows a perspective view on a wall provided with a cladding mounted on a plurality of mounting brackets according to the embodiment of Figure 1;
Figure 10 shows a perspective view on a fourth embodiment of a mounting bracket according to the invention;
Figure 11 shows a schematic side view on the mounting bracket of Figure 10.

[0016] The figures are presented as schematically representations only and are not to scale.

[0017] Figure 1 shows a perspective view on a first

embodiment of a mounting bracket 1 according to the invention. The mounting bracket 1 comprises a wall plate 2 which is arranged to be fixed to a wall which needs cladding. The wall plate 2 preferably has a substantially rectangular shape. The mounting bracket 1 further comprises a first bracket arm 3 and a second bracket arm 4 extending substantially transversely from said wall plate 2. More in particular, the first bracket arm 3 joins the wall plate 2 along a first long side 5 of the substantially rectangular wall plate 2, and the second bracket arm 4 joins the wall plate 2 along a second long side 6 opposite the first long side 5 of the substantially rectangular wall plate 2, such that an attachment of said first bracket arm 3 to the wall plate 2 is substantially in parallel with and spaced apart from an attachment of said second bracket arm 4 to said wall plate 2. As such, a beam receiving space 7 is present between said two bracket arms 3, 4. The mounting bracket 1 may preferably be manufactured as a one-piece bracket. The bracket 1 may be made of plastic, such as for example polypropylene (PP) or polyethylene (PE), or more preferably of a combination of recycled plastics, for example through an extrusion process or for example by injection moulding, or in any other known way.

[0018] Figure 2 shows a schematic side view on the mounting bracket 1 of Figure 1. The first and second bracket arms 3, 4 of this embodiment have a substantially triangular shape, preferably a shape of a substantially isosceles triangle. A top angle 8 of the substantially triangular bracket arm may, but need not, be rounded-off, as shown. Alternatively, the top 8 of the substantially triangular bracket arm may also be truncated, leading to a first and/or second bracket arm having a substantially trapezial shape The first and second brackets arms 3, 4 include a plurality of substantially parallel lines 17, which are substantially in parallel with the first and second long sides 5, 6 of the substantially rectangular wall plate 2. These lines can help a user to align a support beam in the beam receiving space 7 such that the support beam is substantially in parallel with the wall, as shown in Figures 8 and 9. Instead of lines, also grooves could be used for the same purpose. The first and/or second bracket arms 3, 4 may also include a cut-out 9, of which the shape is substantially similar in a geometrical sense of the word to the shape of the first and second bracket arms 3 ,4. A basis of the substantially triangular cut-out 9 is in common with part of a basis of the similar first or second bracket arm 3, 4. The first and/or second bracket arm 3, 4 is preferably symmetric with respect to a perpendicular line A from the top angle 8 to the wall plate 2. The substantially isosceles sides 10, 11 of the substantially triangular first and/or second bracket arms 3, 4 may also include one or more pairs of substantially right-angled protrusions 12, which are an aid in the production process of the mounting brackets, for allowing to more easily loosen the bracket out of the mold. As an example, a first and second long side 5, 6 of the wall plate 2 may have, in an example, a length L in a range of approximately 20-30 centimetres, preferably around 26 cm, while a height H of the first and second bracket arm 3, 4 may be approximately in a range of around 15-25 cm, preferably around 21 cm. These measures may also be longer or shorter, providing larger or smaller mounting brackets, depending on the weight to be borne by the mounting brackets 1.

[0019] Figure 3 shows a schematic cross sectional view along line A of Figure 2. When just coming out of a mould, the first and second bracket arms 3, 4 of the mounting bracket 1 may not include a right angle with the wall plate 2, but slightly deviate from a right angle, in order to improve releasing from the mould, such that the beam receiving space 7 between the first and second bracket arms 3, 4 widens from the wall plate 2 towards the top of the first and second bracket arms 3, 4. After cooling, the bracket arms 3, 4 may have come to a substantially right angle with the wall plate 2, or may slightly incline towards each other. Depending on the size of the mounting bracket 1, especially on a height H of the first and second bracket arms 3, 4, a width W of the beam receiving space 7 may for example be around approximately 85-95 cm at the wall plate 2 for a height H of around 20-25cm, for example approximately 21 cm. As soon as the mounting bracket 1 cools down, the first and second brackets arms 3, 4 will crimp, set themselves and form a substantially right angle with the wall plate 2, or even an angle smaller than 90 degrees, for example to be able to exert a clamping force on a support beam 16. A thickness of the wall plate 2 and/or of the first and second brackets arms 3, 4 may be comprised in a range of approximately 0.5-1.5 cm, or more in case of relatively heavy cladding. The wall plate 2 may also comprise a groove 13 along a longitudinal direction of the wall plate 2, which groove 13 may preferably be located along approximately a centre line of the wall plate 2. This groove 13 can help mounting the mounting bracket 1 to a wall, for example in a vertical direction, or in any other desired direction. Alternatively, instead of a groove, one or more lines, or other types of markers, such as notches, protrusions or cut-outs, for example, on or in the wall plate 2, can mark an orientation during mounting of the mounting bracket to a wall.

[0020] Figure 4 shows a schematic top view on the mounting bracket 1 of Figure 1. The wall plate 2 may be provided with a plurality of bore holes 14, for example two bore holes, which are spaced-apart along a centre line C of the wall plate 2, through which attaching means, such as bolts or others, may extend to fixate the mounting bracket 1 to a wall to be cladded. As can be seen in Figures 2-4, the embodiment of the mounting bracket as shown in Figures 1-4 is symmetrical with respect to axis A shown in Figure 2, and is also symmetrical with respect to a plane transverse to the wall plate 2 and comprising a centre line C of the wall plate 2 along which groove 13 extends. This symmetry can provide a relatively simple shape for the mounting bracket which can be manufactured and mounted to a wall relatively easily.

[0021] Figure 5 shows a schematic perspective view

on a second embodiment of a mounting bracket 1' according to the invention. The first and second bracket arms 3', 4' now have a substantially truncated triangular shape, as seen from the wall plate 2' or, in other words, a substantially trapezoid shape. Contrary to the first embodiment, the first bracket arm 3' differs from the second bracket arm 4', and is not similar anymore in shape in a geometrical sense of the word to the second bracket arm 4'. For example, a length of the attachment 5' of the first bracket arm 3' to the wall plate 2' is longer than a length of the attachment 6' of the second bracket arm 4'.The first and second bracket arms 3', 4' may be provided with a plurality of pre-fabricated bore holes 15' through which attaching means may extend to attach a support beam to the first and second bracket arms 3', 4'.

[0022] Figure 6 shows a schematic perspective view on a third embodiment of a mounting bracket 1" according to the invention. As is already the case for the second embodiment, the first bracket arm 3" differs from the second bracket arm 4". In this case, the second bracket arm 4" has a substantially rectangular shape. Contrary to the second embodiment, bore holes 15" are provided over the entire surface of the first and second brackets arms 3", 4", whereas in the second embodiment, the bore holes 15' are only provided an end of the first and second bracket arms 3', 4' opposite the wall plate 2'.

[0023] Figure 7 shows a perspective view on a pair of mounting brackets 1a, 1b shown in Figure 1. The mounting brackets 1a, 1b are of the type of the first embodiment as shown in Figures 1-4. Part of a support beam 16, which can be attached between the first and second bracket arms 3, 4 in the beam receiving space 7 of the mounting bracket 1, is shown. Such a support beam 16 can preferably have a substantially rectangular or square cross-section. Depending on the desired distance between the wall and the cladding, the height at which the support beam 16 is attached to the mounting bracket 1, can be adapted to said desired distance. As the bracket arms 3, 4 do preferably not extend beyond the support beam 16, the bracket arms 3, 4 can be easily cut flush with the attached support beam, as shown in the mounting bracket 1b, for example along the lines 17 provided on the first and second bracket arms 3, 4. The bracket arms 3, 4 may be provided with one or more bore holes 15 through which attaching means can extend. Alternatively, said holes may be made while attaching the support beam to the bracket arms 3, 4. The beams may be attached to said bracket arms 3, 4 by various attaching means known to the person skilled in the art, for example by bolts, screws, dowels or preferably by hammer-in plugs, which allow relatively quick attaching of the support beam 16 to the mounting bracket.

[0024] Figure 8 shows a perspective view on a wall 18 provided with two support beams 16, each attached to two mounting brackets 1 according to the embodiment of Figure 1. When mounting a cladding to a wall 18, or to any insulation plates fixed to the wall 18, one or more mounting brackets 1 are first fixated to the wall 18 or to said insulation plates, for example by bolts, rivets, screws or other known attaching means. The mounting brackets 1 are mounted to the wall 18 such that the beam receiving opening 7 may be oriented in a substantially vertical direction. In case of a plurality of mounting brackets 1, as is the case in Figure 8, the beam receiving opening 7 of at least two mounting brackets 1 are mounted in line with each other. Mounting brackets not in line with each other are preferably mounted substantially in parallel with one another. Then a support beam 16 is mounted in the beam receiving opening 7 of the mounting bracket 1 and attached directly and in engaging contact with the mounting bracket 1, for example by hammer-in plugs. A single support beam 16 can for example be mounted to a plurality of mounting brackets of which the beam receiving opening 7 are in line with each other. Once the support beams have been attached directly to the bracket arms of the mounting brackets 1, the cladding can be mounted to the support beams, as shown in Figure 9.

[0025] Figure 9 shows a perspective view on a wall 18' provided with a cladding 19 mounted on a plurality of mounting brackets 1 according to the embodiment of Figure 1. The cladding 19 can be mounted in a way similar to the method explained under Figure 8. Depending on the size of the wall to be cladded and on the weight of the cladding to be supported by the mounting brackets 1, the number of mounting brackets 1 per support beam 16 can vary, as well as the distance between two substantially parallel support beams 16, as will be clear to the person skilled in the art. Optionally, insulation material can be provided on the wall 18 or 18' before mounting the cladding 19 to the support beams 16. The cladding 19 may for example comprise any type of panels, for example made of plastic, glass, wood, or other cladding material.

[0026] Figure 10 shows a perspective view on a fourth embodiment of a mounting bracket according to the invention. Analogously to the first embodiment of the mounting bracket shown in Figure 1, the mounting bracket 1"' comprises a wall plate 2'" which is arranged to be fixed to a wall which needs cladding. The wall plate 2'" preferably has a substantially rectangular shape. The mounting bracket 1"' further comprises a first bracket arm 3'" and a second bracket arm 4"' extending substantially transversely from said wall plate 2"'. The first and second bracket arms 3"', 4'" now have a substantially truncated triangular shape, as seen from the wall plate 2'" or, in other words, a substantially trapezoid shape. The first and second bracket arms 3"', 4"' may be provided with lines and/or grooves to facilitate easy alignment of the support beam to the bracket arms, similarly to the mounting bracket of the first embodiment. Contrary to the first embodiment, the first bracket arm 3"' differs from the second bracket arm 4"': the first bracket arm 3"' may include a cut-out 9, of which the shape is substantially similar in a geometrical sense of the word to the shape of the first bracket arms 3"', whereas the second bracket arm 4"' may not include such a cut-out. A basis of the substan-

tially triangular cut-out 9 is in common with part of a basis of the similar first bracket arm 3. The sides 10"', 11"' of the substantially triangular or trapezial first or second bracket arms 3"', 4"' may also include one or more pairs of substantially right-angled protrusions 12, which are an aid in the production process of the mounting brackets, for allowing to more easily loosen the bracket out of the mold. This fourth embodiment of a mounting bracket 1"' is configured to be mounted to a wall such that the beam receiving space 7"' between the first and second bracket arms 3"', 4"' is not oriented in a substantially vertical direction, as is the case for the first embodiment, as can be seen in Figures 8 and 9, but is oriented in a substantially horizontal direction, or under an angle of substantially 30 degrees with respect to a horizontal direction. Thereto, the second bracket arm 4"', which is configured to be mounted as a lower bracket arm, does preferably not include a cut-out 9, in order to reinforce said second bracket 4"', and is preferably supported by at least one, preferably two or more, support brackets 20. The at least one support bracket 20 is preferably positioned substantially transversely with respect to both the wall plate 2"' and the second bracket arm 4"'. The first bracket arm 3"', which is configured to be an upper bracket arm, may or may not be supported by such support brackets. After mounting of the support beam to the mounting bracket and, preferably, fixating of the support beam to the mounting bracket by means of fastening elements such as one ore more screws or nails, the bracket arms 3"', 4"' can be cut off to a length approximately even with the support beam. By cutting off the bracket arms until they are even with the support beam, the bracket arms preferably do not extend beyond the support beam and the cladding can be easily and smoothly connected to the support beam.

[0027] Figure 11 shows a schematic side view on the mounting bracket of Figure 10. The wall plate 2"' may further comprise a protrusion 21, which is tilted with respect to the wall plate over an angle A of substantially 30 degrees. Said protrusion 21 may include a bore hole configured to receive attaching means therethrough for fastening the bracket to a wall and/or an isolation panel. The tilt of said protrusion 21 may improve fixing of the mounting bracket 1"' to a wall under an angle of substantially 30°.

[0028] For the purpose of clarity and a concise description, features are described herein as part of the same or separate embodiments, however, it will be appreciated that the scope of the invention may include embodiments having combinations of all or some of the features described. It may be understood that the embodiments shown have the same or similar components, apart from where they are described as being different.

[0029] In the claims, any reference signs placed between parentheses shall not be construed as limiting the claim. The word 'comprising' does not exclude the presence of other features or steps than those listed in a claim. Furthermore, the words 'a' and 'an' shall not be construed as limited to 'only one', but instead are used to mean 'at least one', and do not exclude a plurality. The mere fact that certain measures are recited in mutually different claims does not indicate that a combination of these measures cannot be used to an advantage. Many variants will be apparent to the person skilled in the art. All variants are understood to be comprised within the scope of the invention defined in the following claims.

Claims

1. Mounting bracket for mounting a cladding to a wall comprising a wall plate arranged to be fixed to the wall substantially in parallel with said wall and a first and a second bracket arm extending substantially transversely from said wall plate wherein a connection of said first bracket arm to the wall plate is substantially in parallel with and spaced apart from a connection of said second bracket arm to said wall plate such that a beam receiving space is present between said two bracket arms.

2. Mounting bracket according to claim 1, wherein the mounting bracket is made of plastic, preferably of recycled plastic.

3. Mounting bracket according to any of the preceding claims, wherein the mounting bracket is made as a single piece.

4. Mounting bracket according to any of the preceding claims, wherein the first bracket arm and the second bracket arm have a substantially triangular shape.

5. Method for mounting a cladding to a wall comprising the steps of:

   - fixing a plurality of mounting brackets according to any of the preceding claims to the wall substantially in parallel to each other such that the beam receiving opening of at least two mounting brackets are in line with each other;
   - mounting a support beam to the beam receiving opening of the mounting bracket;
   - mounting a cladding to the support beam.

6. Method according to claim 5, wherein the plurality of mounting brackets is fixed to the wall such that the beam receiving openings are all oriented in a substantially vertical direction, or in a substantially horizontal direction, or under an angle of substantially 30 degrees with respect to a horizontal direction.

7. Method according to claim 6, wherein the support beam is mounted to a plurality of mounting brackets of which the beam receiving opening is in line with each other.

8. System comprising at least one bracket according to any of the claims 1 - 4 and a support beam inserted in the bracket.

9. System according to claim 8, wherein the bracket arms of the bracket are cut flush with the support beam.

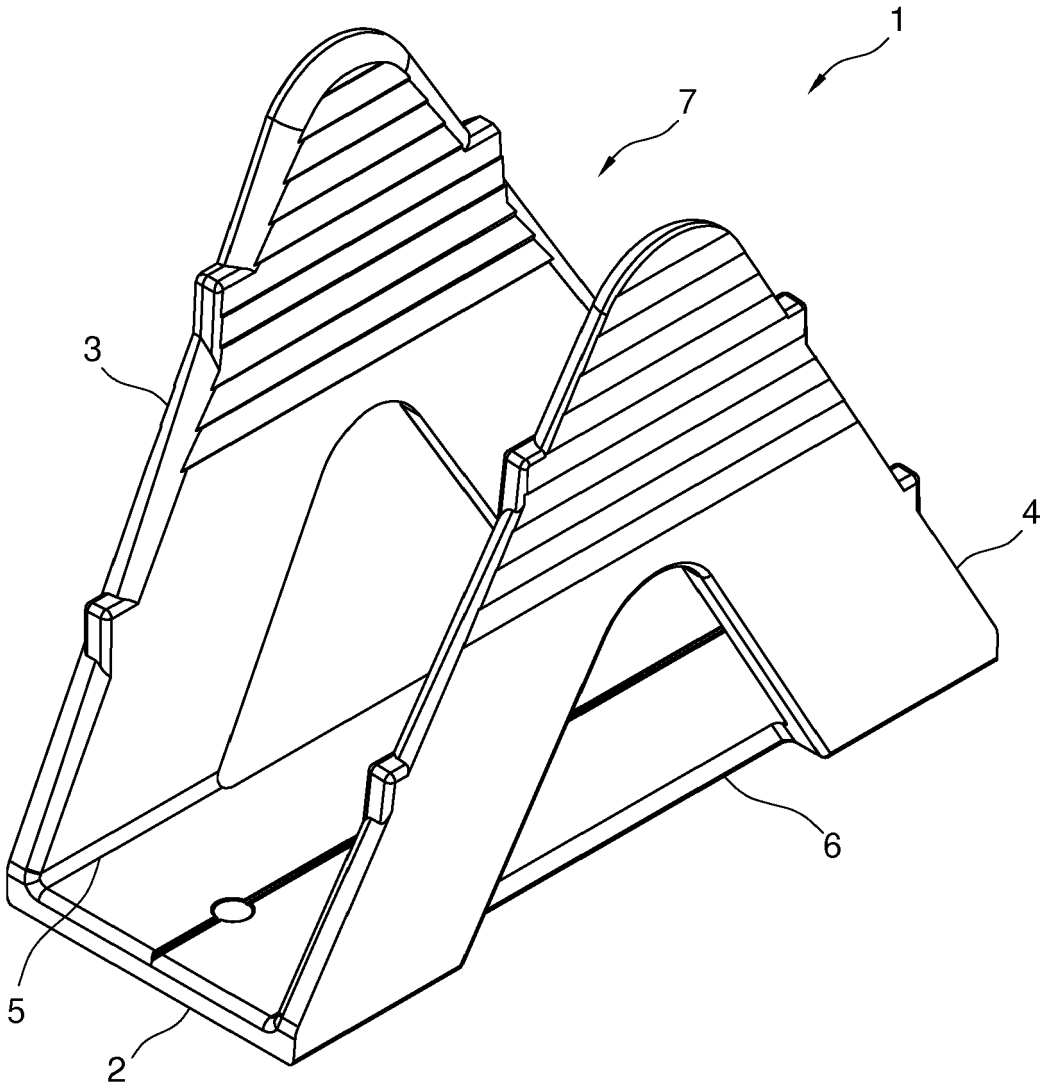

Fig. 1

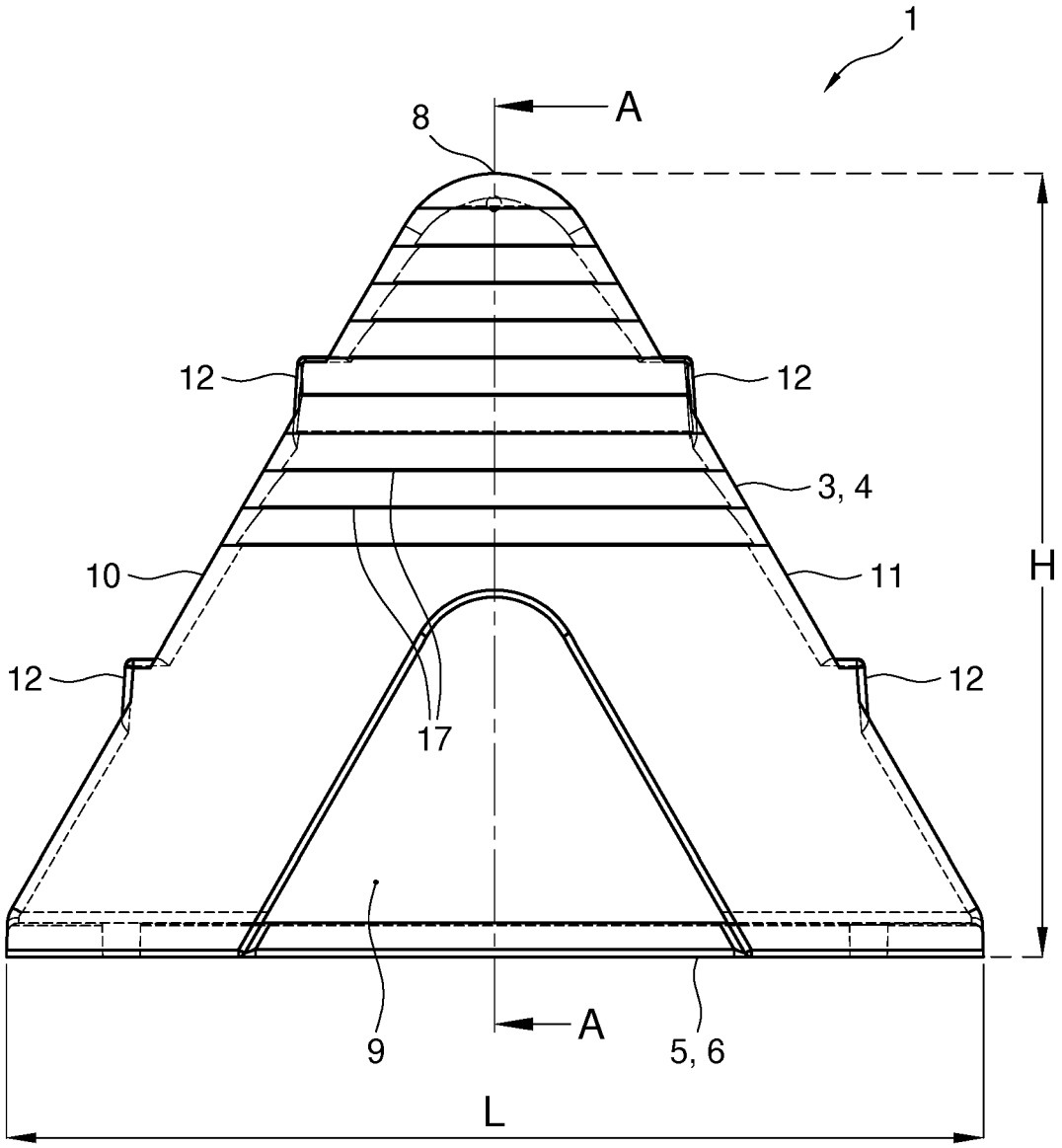

Fig. 2

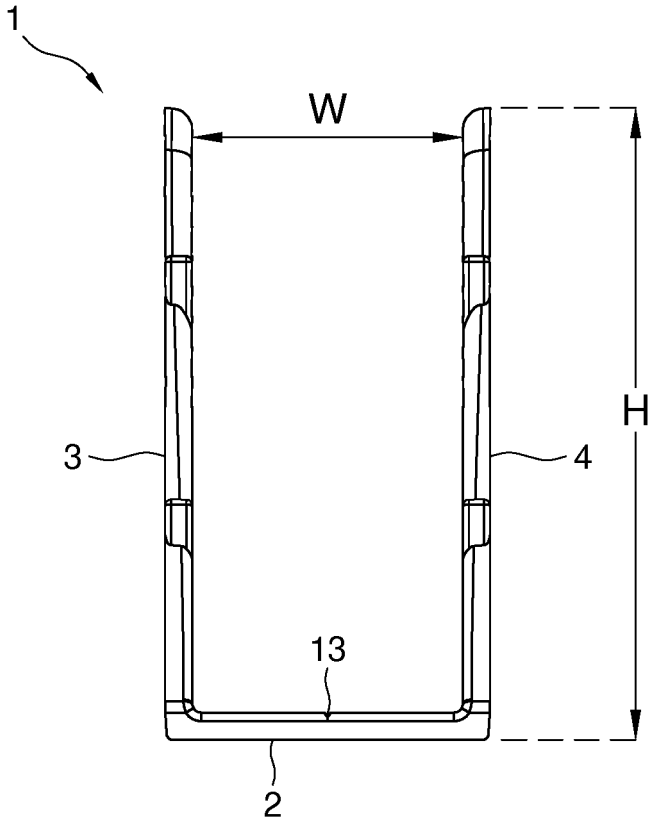

Fig. 3

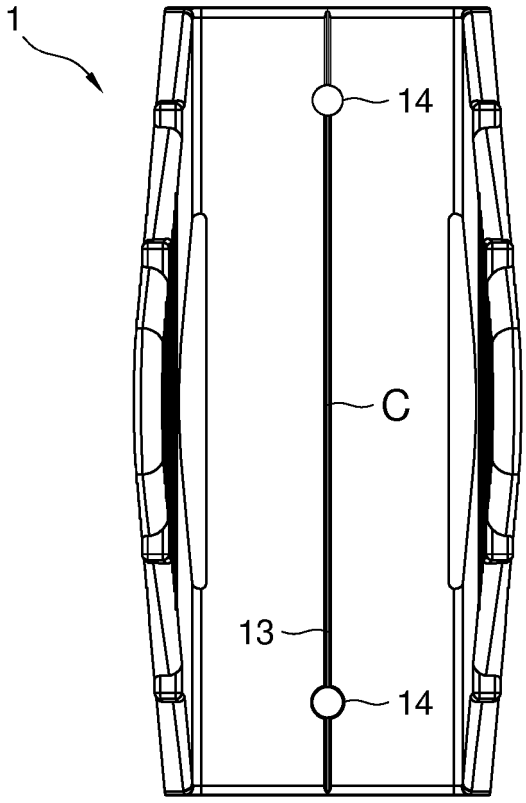

Fig. 4

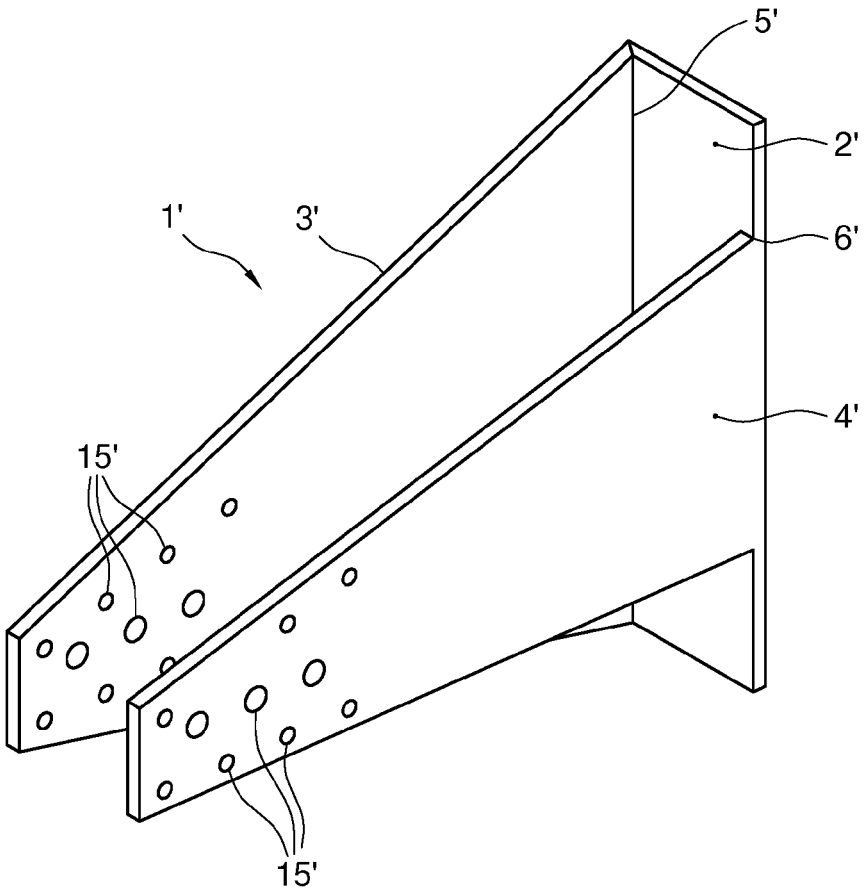

Fig. 5

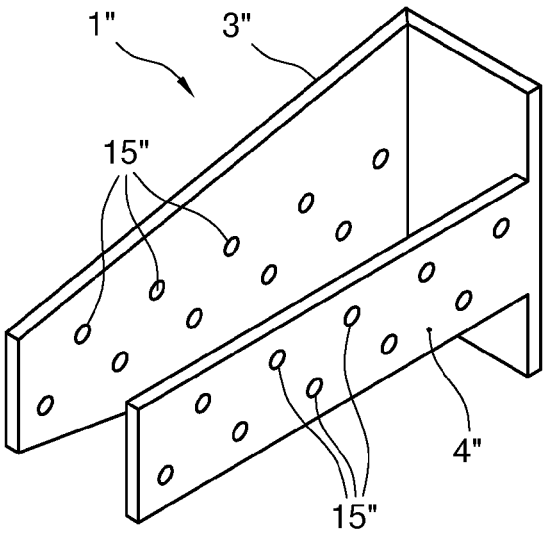

Fig. 6

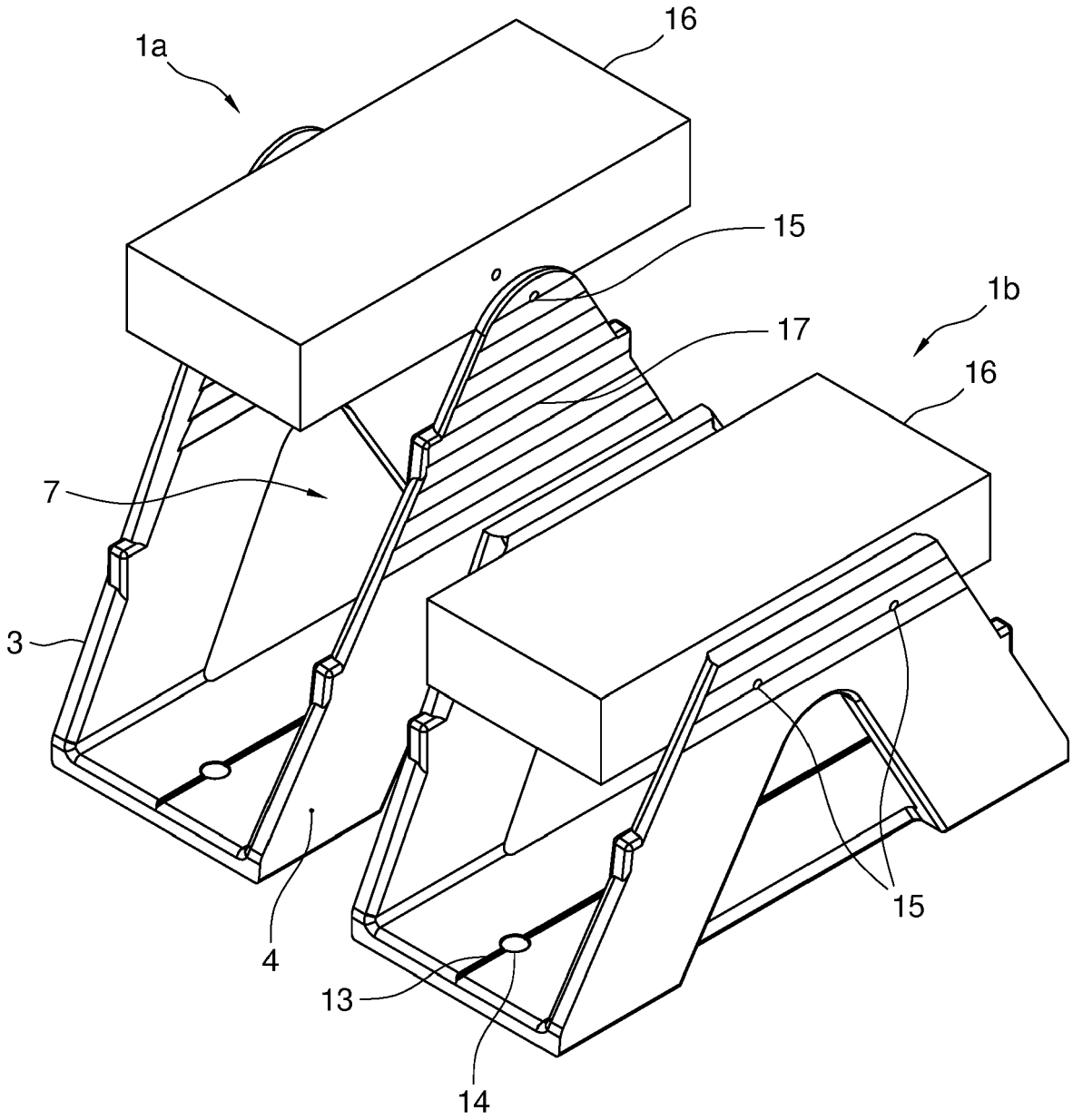

Fig. 7

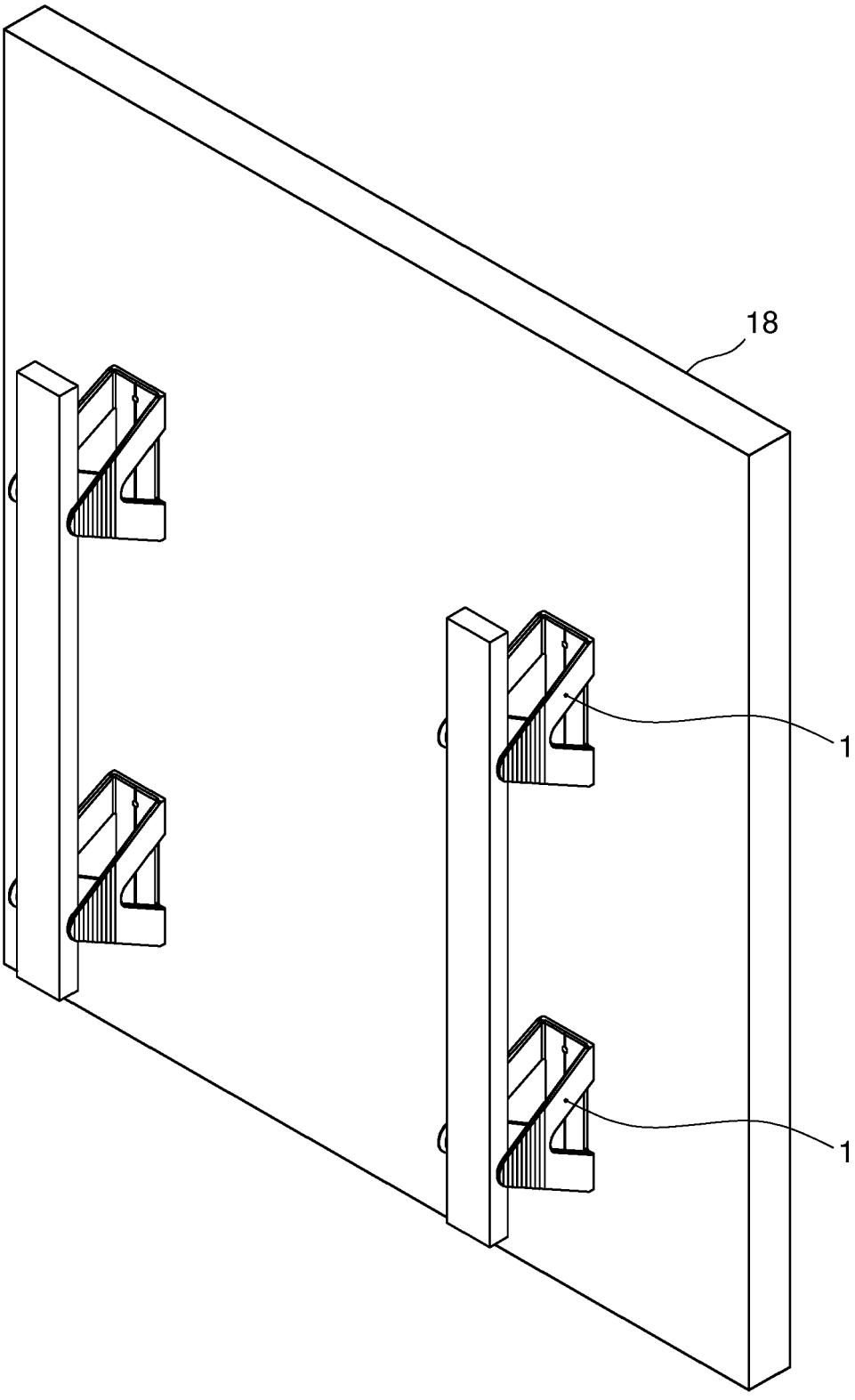

Fig. 8

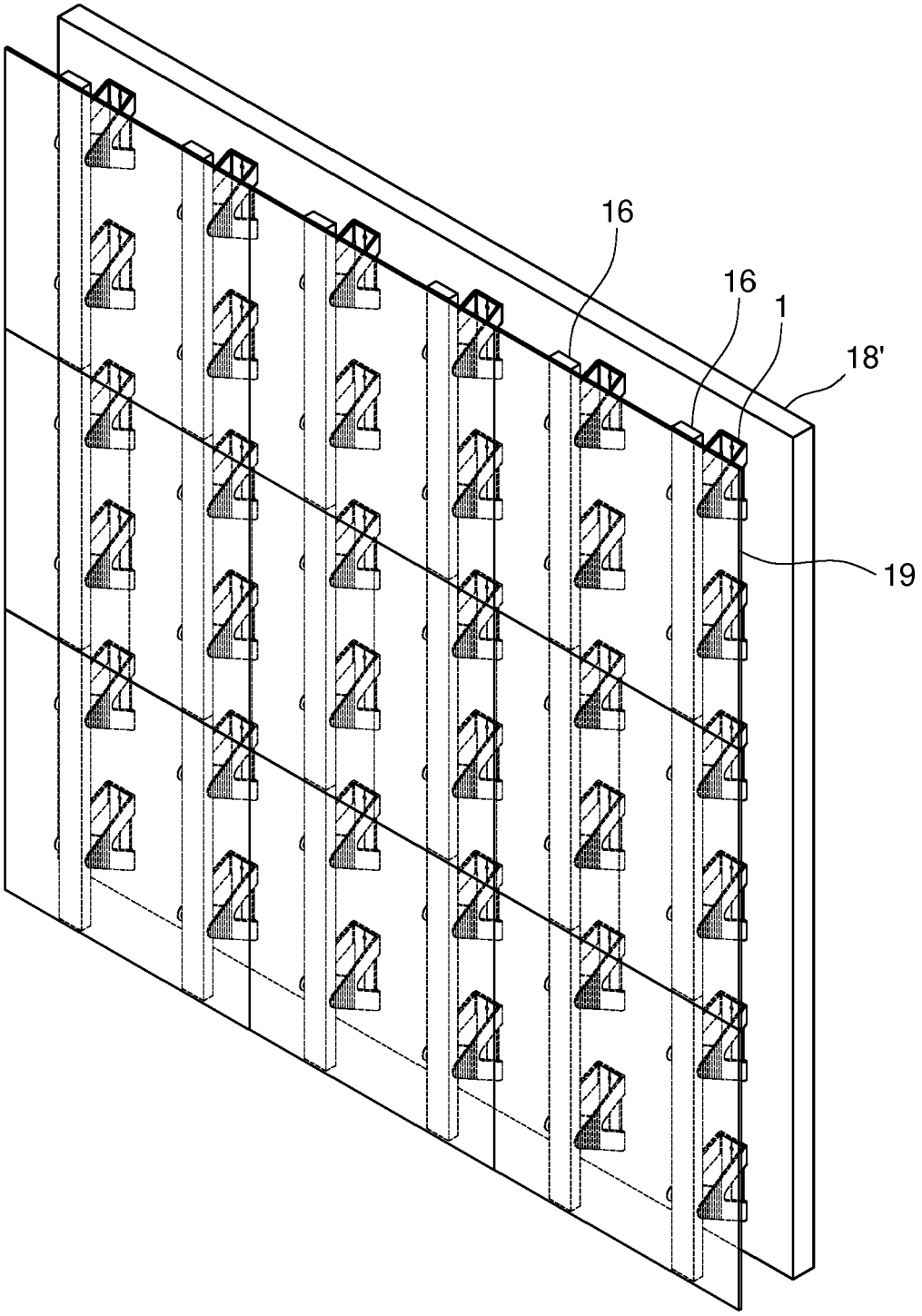

Fig. 9

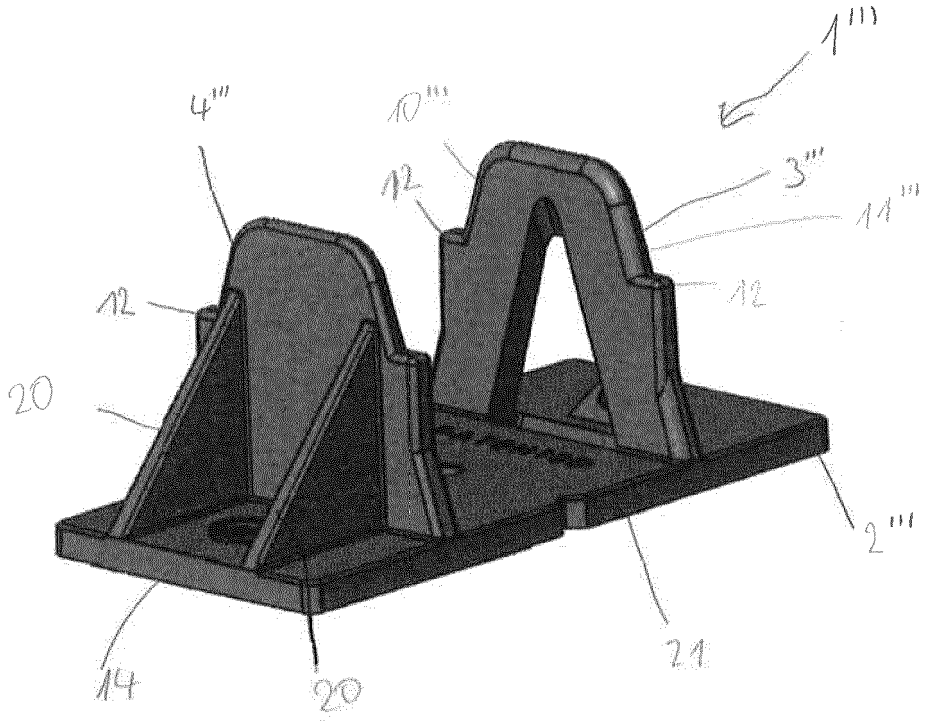

Fig. 10

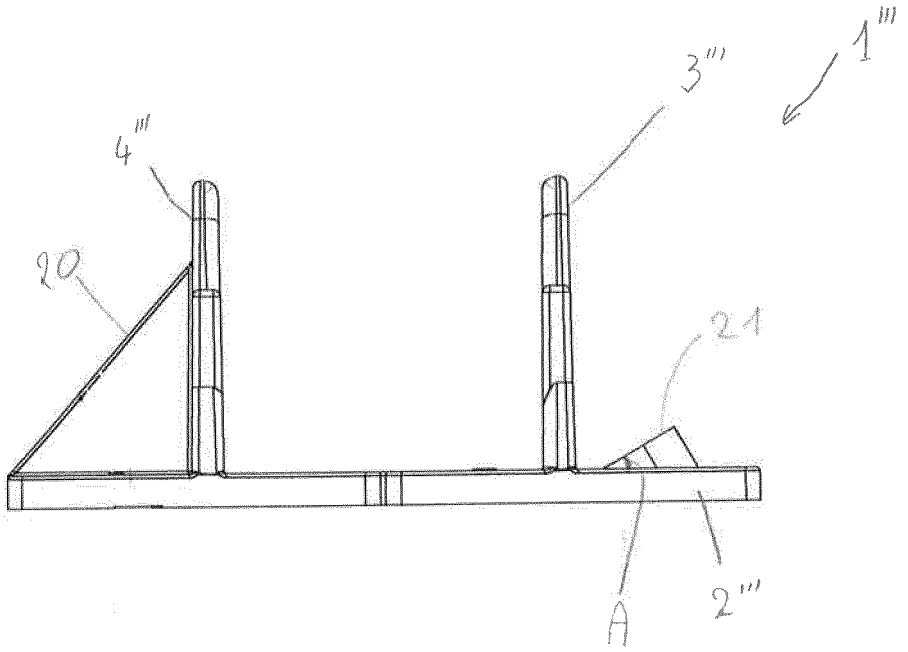

Fig. 11

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EUROPEAN SEARCH REPORT

Application Number
EP 19 17 6785

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			E04F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	20 September 2019	Galanti, Flavio

CATEGORY OF CITED DOCUMENTS

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20-09-2019

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