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(54) **CLIP, SYSTEM COMPRISING SUCH A CLIP, AND USE OF SUCH A CLIP**

(57) The invention relates to a clip, comprising: a plate; a plurality of hooks extending from a front surface of the plate and configured to engage with an edge of a board; at least three apertures that are arranged in the plate and allow a user to selectively arrange a fastener through one or more than one aperture and mount the plate to the frame; wherein the plurality of apertures is distributed in a length direction of the plate; wherein at

least one aperture is arranged in one of a first section and a second section; and wherein the other of the first section and the second section is divided halfway the length thereof in a first subsection and a second subsection that each comprise at least one aperture.

The invention is further directed to a system comprising such a clip, as well as to the use of such a clip.

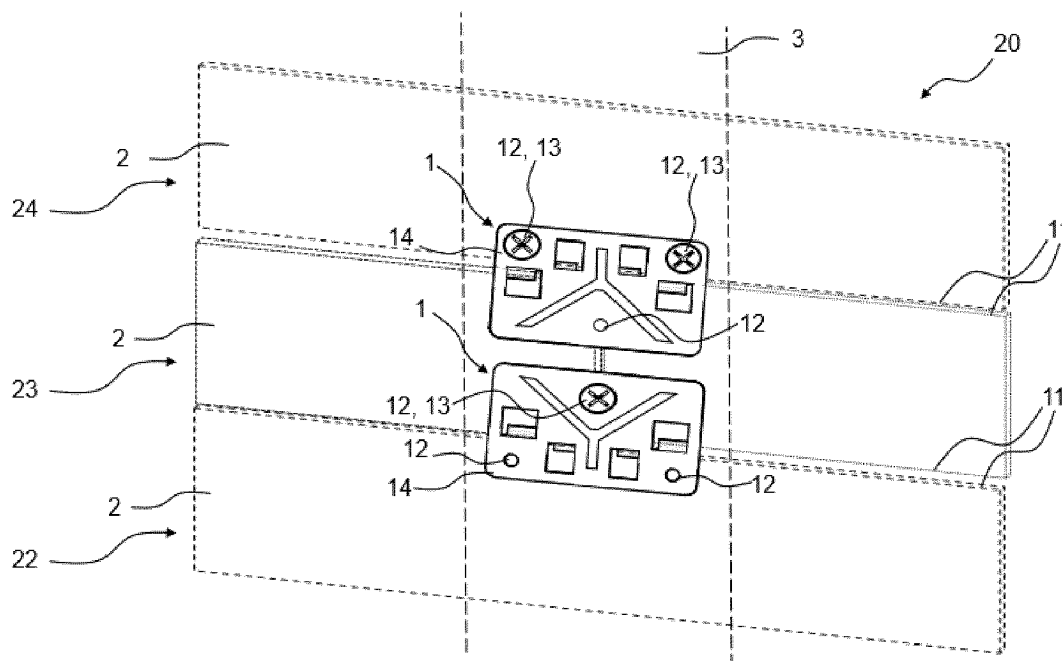


Fig. 2

Description

Field of the invention

[0001] The present invention relates to a clip suitable for mounting cementitious boards, or sidings made of wood or composite, to a frame, such as in particular for mounting fiber cement boards or sidings to a support, typically a wooden support or metal frame. The invention furthermore relates to a system comprising such a clip, as well as to the use of such a clip.

Background of the invention

[0002] Cementitious boards, in particular fiber cement boards, also known as cementitious boards, or sidings of wood or composite, are well known nowadays for providing a low maintenance facade for houses, offices, buildings etc., often to replace wooden or maintenance intensive alternatives. In this application, boards and sidings are considered equivalents in the context of the invention.

[0003] Compared to wooden alternatives, such cementitious boards, like fiber cement sidings, are stiff and heavy. As such it requires special mounting systems to mount these and keep these boards fixed to walls.

[0004] Typically a frame, often a metal such as an aluminum or galvanized steel frame, or a wooden support structure or frame is fixed to the load bearing wall, to which frame the boards are fixed.

[0005] Mounting aids and clips are known to provide a more easily mounting. Such clips comprise a rectangular plate with an aperture to allow the plate to be fastened to a frame with a fastener, such as a screw. A plurality of hooks allow the clip to engage with an edge of a cementitious board, and thereby mount said cementitious board to the frame to which the clip itself is mounted.

[0006] There is an ongoing need to improve the versatility and ease of handling of said clips. For example, in view of specific requirements in some markets, that may require that a single hook of the clip may only engage with one board at the same time, the use of prior art clips may be limited to one specific orientation that does not always suffice the needs to securely mount a cementitious board. Preferably, one clip may be used in different orientations, also in markets where one hook may only engage with one board at the same time. Another ongoing desire is to increase the ease of use and safety. In practice, the space to use professional tools such as nail guns as to apply nails as an alternative to conventional screws may be limited. Consequently, if such nail guns are nevertheless used, sometimes accidents occur, that may even lead to the user being injured. There is an ongoing need to provide the option to use professional tools such as nail guns in a safe way.

Summary of the invention

[0007] An objective of the present invention is to provide a clip, that is improved relative to the prior art and wherein at least one of the above stated problems is obviated or alleviated.

[0008] Said objective is achieved with the clip according to claim 1 of the present invention, comprising:

- a plate having a length and a width, wherein an imaginary line halfway the width divides the plate into a first section extending from the imaginary line to a first longitudinal side of the plate, and a second section extending from the imaginary line to a second longitudinal side of the plate;
- a plurality of hooks extending from a front surface of the plate;
- at least three apertures that are arranged in the plate and allow a user to selectively arrange a fastener through one or more than one aperture and mount the plate to the frame;
- wherein the plurality of apertures is distributed in a length direction of the plate;
- wherein at least one aperture is arranged in one of the first section and the second section; and
- wherein the other of the first section and the second section is divided halfway the length thereof in a first subsection and a second subsection that each comprise at least one aperture.

[0009] By virtue of the plurality of apertures, that are distributed in the length direction of the clip one the one hand, and that are divided over the first section and the second section on the other hand, the clip allows the user to apply said clip in different orientation. As such, the clip according to the invention provides increased versatility.

[0010] This versatility is further enabled in a preferred embodiment, wherein the plurality of hooks comprises hooks with their openings facing towards opposed longitudinal sides. A first of said hooks is arranged with an opening directed towards the first longitudinal side of the plate. A second of the hooks is arranged with an opening directed towards the second longitudinal sides of the plate, and thus facing away from the first longitudinal side. Hence, in case of a reversed orientation of the clip, there are still hooks for engagement with an edge of a board above and with an edge of a board below. Furthermore, a hook in the first subsection may engage with a first board and a hook in the second subsection may engage with a second board arranged adjacent to the first board.

[0011] The invention is further directed to a system, comprising a frame and a plurality of boards, in particular cementitious boards, that are mountable and/or mounted to the frame using a plurality of clips according to the invention. When installed, such a system is also known as a cladding system. The installed system will further comprise fasteners, such as screws, rivets, nails or other fastener types.

[0012] The boards are herein preferably planks, having a length, width and thickness, wherein the length is larger than the width. Preferably, the length is at least twice the width, more preferably at least threefold, at least fivefold, at least eightfold, or even at least tenfold. For instance, in one suitable implementation, the length may be in the range of 1.2 to 5.0 meter, preferably between 3.0 and 4.0 meter. The width may be in this implementation, in the range of 0.10 to 1.0 meter, preferably in the range of 0.15 to 0.25 meter. More preferably, the boards are provided with side edges including a thinned portion, such as a tongue. Alternatively, use may be made of boards comprising a groove on at least one side, and to be used with a mating side edge. Such groove is more particularly a cavity arranged in between of two adjacent portions of the board. The boards may herein be of one type, configured to cooperate with each other to create a surface. Alternatively, there may be boards of a first and second type having mutually different side edges, so that a surface can be created using said boards of the first and second type.

[0013] In one specific implementation, the board is provided with a thinned portions at both a first and an opposed side edge, such that the thinned portions of different boards may overlap to hide the clips and/or fasteners used for attachment of the boards to the frame. The thickness of the board is herein for instance between 8 and 15 mm, such as 10-12 mm, whereas the thinned portion may each have a thickness from 3-12 mm, for instance 4-6 mm. According to a preferred implementation, the clips may then be mounted in a manner that these are invisible from the outside surface. The boards are typically mounted on frames such as wooden beams, while the use of alternative frames such from aluminium, steel or plastic is not excluded. In a most preferred embodiment, the boards are fiber cement boards. When mounting fiber cement boards, these are arranged so as to create a ventilation channel on a rear side of the boards.

[0014] The invention is also directed to the use of such a clip for mounting boards, in particular cementitious boards, to a frame. Said use preferably comprises the steps of:

- a) mounting one or more than one clip to the frame;
- b) arranging a board, in particular a cementitious board, with a first longitudinal side thereof in engagement with at least one of the plurality of hooks of the one or more than one clip, to thereby support the board at the first longitudinal side thereof;
- c) arranging one or more than one further clip at an opposite longitudinal side of the board, wherein the one or more than one further clip 1 is arranged in a different orientation than the one or more than one clip 1 that was mounted in step a) above;
- d) mounting said one or more than one further clip to the frame by arranging one or more than one fastener in an aperture that is freely accessible past the opposite longitudinal side of the board, to thereby

hold the board by said further clip at the opposite longitudinal side thereof and mount said board to the frame by said one or more than one clip and said one or more than one further clip; and
e) repeating steps b), c) and d) to mount further boards to the frame.

[0015] Preferred embodiments are the subject of the dependent claims.

[0016] The various aspects and features described and shown in the specification can be applied in combination, or individually, wherever possible. These individual aspects, and in particular the aspects and features described in the attached dependent claims, may be an invention in its own right that is related to a different problem relative to the prior art.

Brief description of the drawings

[0017]

Figure 1 is a perspective view of a clip according to the invention; and

Figure 2 is a perspective view of the use of clips as shown in Fig. 1 in two different mounting orientations.

Description of illustrative embodiments

[0018] The clip 1 according to the invention is configured to mount boards 2, in particular cementitious boards, to a frame 3. It is remarked that Figure 2 is a perspective view seen from the frame, and although the frame 3 is not shown, the position thereof is indicated with the schematic contours 3. The clips 1 are mounted to said frame 3 with a back surface 14 thereof. Said back surface 14 is preferably a substantially flat surface.

[0019] The clip comprises a plate 4 having a length L and a width W, wherein an imaginary line I halfway the width divides the plate 4 into a first section 5 and a second section 7. The first section 5 extends from the imaginary line I to a first longitudinal side 6 of the plate 4, and the second section 7 extends from the imaginary line I to a second longitudinal side 8 of the plate 4. The first longitudinal side 6 and the second longitudinal side 8 of the plate 4 are opposite longitudinal sides of the plate 4.

[0020] A plurality of hooks 9 extend from a front surface 10 of the plate 4, wherein said hooks 9 are configured to engage with an edge 11 of a board 2 (Figure 2).

[0021] In the shown embodiment, the plate 4 is substantially rectangular, having a thickness in the range of about 0.4 - 1 mm, a length in the range of about 30 - 100 mm and a width in the range of about 20 - 50 mm. The width is equal to or smaller than the length, and consequently the plate 4 may also be substantially square. The apertures may comprise a substantially circular shape having a diameter in the range of about 2 - 8 mm.

[0022] According to a first aspect, the clip 1 comprises at least three apertures 12 that are arranged in the plate

4 and allow a user to selectively arrange a fastener 13 through one or more than one aperture 12 and mount the plate 4 to the frame 3. The plurality of apertures 12 is distributed in a length direction 15 of the plate 4. At least one aperture 12 is arranged in one of the first section 5 and the second section 7. In the clip 1 shown in the Figures, the at least one aperture 12 is arranged in the first section 5. The other of the first section 5 and the second section 7 is divided halfway the length L thereof in a first subsection 7-1 and a second subsection 7-2 that each comprise at least one aperture 12. Thus, by virtue of the plurality of apertures 12, that are divided over the first section 5 and the second section 7, the clip 1 allows the user to apply said clip 1 in different orientation. As such, the clip 1 according to the invention provides increased versatility.

[0023] The at least one aperture 12 that is arranged in one of the first section 5 and the second section 7 is arranged substantially halfway the length L of said respective section. In the embodiment shown in the Figures, said at least one aperture 12 is a single aperture 12, also referred to as "the first aperture 12-1", that is arranged in the first section 5. The other of the first section 5 and the second section 7, i.e. the second section 7 in the shown embodiment, is the section that is divided halfway the length L thereof in the first subsection 7-1 and the second subsection 7-2 that each comprise at least one aperture 12. Throughout this description, the apertures 12 that are arranged in the second section 7, more in particular in the subsections 7-1, 7-2 thereof, are also referred to as the "further apertures 12-2".

[0024] The plurality of hooks 9 comprises at least three hooks 9 that are distributed in the length direction 15 of the plate 4. One or more than one hook 9, 9a of the plurality of hooks 9 comprises an opening 16 that is directed towards the first longitudinal side 6 of the plate 4, wherein this hook 9, 9a defines a hook of a first type. One or more than one hook 9, 9b of the plurality of hooks 9 comprises an opening 16 that is directed towards the second longitudinal side 8 of the plate 4, wherein this hook 9, 9b defines a hook 9b of a second type. In the shown embodiment, the hooks 9a of the first type are arranged near the sides of the plate 4, whereas the hooks 9b of the second type are - seen in the length direction 15 of the plate 4 - arranged in between the hooks 9a of the first type.

[0025] One of the at least one aperture 12 that is arranged in the first subsection 7-1, i.e. the further aperture 12-2 shown on the left side in Figure 1, is arranged substantially between one of the hooks of the first type 9a and the second longitudinal side 8 of the plate 4. Similarly, one of the at least one aperture 12 that is arranged in the second subsection 7-2, i.e. the further aperture 12-2 shown on the right side in Figure 1, is arranged substantially between one of the hooks of the first type 9a and the second longitudinal side 8 of the plate 4. Preferably, the further aperture 12-2 in each subsection 7-1, 7-2 is arranged substantially between one of the hooks of the

first type 9a and the second longitudinal side 8 of the plate 4. More in particular, the further aperture 12-2 in each subsection 7-1, 7-2 is arranged directly between a corresponding hook of the first type 9a and the second longitudinal side 8 of the plate 4.

[0026] At least one aperture 12 that is arranged in the first section 5 is arranged substantially between at least one hook of the second type 9b and the first longitudinal side 6 of the plate 4. In Figure 1, the first aperture 12-1 is arranged substantially between both hooks of the second type 9b and the first longitudinal side 6 of the plate 4.

[0027] The clip 1 comprises one or more than one protrusion 17 extending outward relative to the front surface 10 of the plate 4. Said protrusion 17 may define a reinforcement of said plate 4, i.e. increasing the stiffness of said plate 4. The protrusion 17 is preferably a longitudinal protrusion, such as a protrusion comprising one or more portions of longitudinal shape, and may be defined by a bulge or a rise, e.g. being one or a fold, a ply or a rib.

[0028] As shown in Figure 1, said protrusion 17 is absent in an area of the plate between the at least one aperture 12-1 in the first section 5 and a closest distance to the first longitudinal side 6 of the plate 4.

[0029] Figure 1 also shows that said one or more than one protrusion 17 is absent in an area of the plate 4 between the at least one aperture 12, 12-2 in the second section 7 and a closest distance to the second longitudinal side 8 of the plate 4.

[0030] Said one or more than one protrusion 17 is arranged in an area of the plate between the at least one aperture 12-1 in the first section 5 and the imaginary line (I) halfway the width W of the plate 4, wherein said one or more than one protrusion 17 defines a support configured to support a tool, in particular a nail gun, to arrange a fastener 13 through the aperture 12-1 to mount the plate 4 to the frame 3.

[0031] If the one or more than one protrusion 17 comprises a shape enclosing an obtuse angle α , the tool may be supported from multiple sides, thereby providing a very reliable support. In Figure 1, a circle shown in dashed lines indicates an area A that may be a contact surface with a (not shown) head of a (not shown) nail gun that rests against opposing segments of the longitudinal protrusion 17.

[0032] In the illustrated embodiment, the one or more than one protrusion 17 comprises a Y-shape, and variations thereof such as a V-shape or truncated V-shape are also feasible. The Y-shape provides support to a tool such as a nail gun, by means of the main legs 18-1, 18-2. The further leg 19 of the Y-shaped protrusion 17 provides strength and stiffness to the second section 7. The Y-shape may be considered to divide the plate 4 in a total of three segments, that roughly coincide with the previously described first section 5, the first subsection 7-1, and the second subsection 7-2. A first segment S1 is defined as the area enclosed in between the first and second legs 18-1, 18-2 of the Y-shape, i.e. where obtuse angle α is defined and where area A is situated. The

obtuse angle α is preferably in the range of 90 to 170 degrees, more preferably between 100 and 150 degrees, more preferably in the range of 105 to 135 degrees, such as 120 degrees. A second segment S2 is defined as the area below the first leg 18-1 (left-hand side of the drawing) of the Y-shape as shown in Figure 1, i.e. where the two left hooks 9, 9a, 9b and the left further aperture 12-2 are situated. Finally, a third segment S3 is defined as the area below the second leg 18-2 (righthand side of the drawing) of the Y-shape as shown in Figure 1, i.e. where the two right hooks 9, 9a, 9b and the right further aperture 12-2 are situated.

[0033] The first segment S1 is preferably free from protrusions 17 to provide an unobstructed area for placement of a tool, such as a nail gun, of which the contact area of a head thereof is indicated as area A in Figure 1. The first and second legs 18-1, 18-2, besides providing an abutment for the tool, contribute to the stiffness of the clip 1.

[0034] Notwithstanding the beneficial properties obtained with the illustrated embodiment of an Y-shaped protrusion 17, alternative embodiments may also be used within the scope of the invention. For instance, separate protrusions may be used for stiffening along the length direction L and along the width direction W. An example thereof is an implementation with a first and a second protrusion extending along the width direction and a third protrusion extending along the length direction. In such implementation, the first and second protrusion are for instance located between the hooks 9a of the first type, with their opening facing towards the first longitudinal direction 6 and the one or more hooks 9b of the second type, with their opening facing towards the second longitudinal direction 8. The third protrusion is then preferably arranged in the first section 5, thus in the same section as the first aperture 12-1. In order to provide sufficient space for a nail gun, if so desired, the third protrusion may be subdivided in two separate protrusions which are preferably arranged along a single line. Evidently, alternative fasteners such as screw or rivets may also be used.

[0035] Figure 2 shows a system 20, comprising a frame 3 (of which the contours are indicated with dashed lines), and a plurality of boards 2, in particular cementitious boards, that are mounted to the frame 3 using a plurality of clips 1 as described above. It is noted that the system 20 in Figure 2 is shown from behind, i.e. looking from the frame 2 outward. Therefore, the boards 2 are drawn behind the clips 1. The fasteners 13 are schematically drawn (and cut off) at the back surface 14 of the plate. In practice, the fastener 13 would extend out of the paper and into the frame 3.

[0036] In a preferred embodiment, the cementitious board 2 is a fiber cement board, which is a visually nice material with high requirements as to dimensional stability, water absorption and mechanical properties. Compositions and manufacturing methods of fiber cement boards are known, and include both cement, such as

Portland cement and fibers, such as cellulose and/or synthetic fibers. The Hatschek and flow-on method are preferred industrial manufacturing methods. More preferably, the fiber cement board is a so-called medium density or high-density board, with a density of at least 1.0 kg/dm³ and at least 1.5 kg/dm³ respectively. Many of such fiber cement boards have a thickness in the range from 4 to 14 mm. The clips of the present invention are particularly configured for such medium- or high-density boards with such a thickness, more preferably a thickness in the range of 8-12 mm. Most preferably, the clips are used for plates with a plank-form, in which the plate is much larger in a length direction than in a width direction. In the shown embodiment, the board 2 is substantially rectangular, having a thickness in the range of about 5 - 15 mm, a length in the range of about 1000 - 5000 mm and a width in the range of about 50- 300 mm.

[0037] The clip 1 is used for mounting boards 2, in particular cementitious boards, to a frame 3. As shown in Fig 2, the boards have a plank-form, this type of boards 2 are also known as "siding". In practice, a first board 2 may be arranged with a (not shown) dedicated profile, before one or more than one clip 1 according to the invention are arranged to the frame 3. For the board 2 being a siding, the longitudinal sides thereof may be provided with thinned portions, which are arranged so that such thinned portions of adjacent boards overlap each other after mounting. However, alternative designs are not excluded, for instance wherein one of the first and the second longitudinal side thereof is embodied as a tongue of the siding, and the other of the first and the second longitudinal side thereof is embodied as a groove of said siding.

[0038] Generally, using the clips 1 for mounting boards 2 to the frame 3 in either a horizontal or a vertical orientation of the boards 2 comprises the steps of:

- a) mounting one or more than one clip 1 to the frame 3;
- b) arranging a board 2, in particular a cementitious board, with a first longitudinal side thereof in engagement with at least one of the plurality of hooks 9 of the one or more than one clip 1, to thereby support the board 2 at the first longitudinal side thereof;
- c) arranging one or more than one further clip 1 at an opposite longitudinal side of the board 2;
- d) mounting said one or more than one further clip 1 to the frame 2 by arranging one or more than one fastener 13 in an aperture 12 that is freely accessible past the opposite longitudinal side of the board 2, to thereby hold the board 2 by said further clip 1 at the opposite longitudinal side thereof and mount said board 2 to the frame 3 by said one or more than one clip 1 and said one or more than one further clip 1; and
- e) repeating steps b), c) and d) to mount further boards 2 to the frame 1.

[0039] In the embodiment shown in Figure 2, the boards 2 are mounted in a horizontal orientation, i.e. one above the other. Herein, a second clip is mounted in an upside down orientation to a first clip. Herewith, the arrangement of the plurality of apertures is exploited in most beneficial manner. However, it is added for sake of clarity, that it is not necessary and may not be desired that any second clip is mounted in an upside down orientation to a first clip and/or that any second clip is mounted directly above a first clip. As shown in Figure 2, the first and second clip are arranged so as to cover the lateral ends of a first and a second adjacent board. When clips are arranged, relatively to the board at other locations, such as away from a lateral end, a first and a second clip that engage a single board from the bottom side and the top side, need not be above each other, but may be laterally displaced. In such a situation, the second clip may be arranged in an upside down orientation, but that is not deemed necessary. It is thus feasible that merely a few of the clips will have the upside down orientation. It is furthermore not necessary - but it may be practical - that all of the clips will have at least three apertures.

[0040] Using the clips 1 for mounting boards 2 to the frame 3 as shown in Figure 2 comprises the steps of:

- a) mounting one or more than one clip 1 to the frame 3;
- b) arranging a board 2, in particular a cementitious board, with a lower longitudinal side thereof in engagement with at least one of the plurality of hooks 9 of the one or more than one clip 1, to thereby support the board 2 from below at the lower longitudinal side;
- c) arranging one or more than one further clip 1 at an upper longitudinal side of the board 2, wherein the one or more than one further clip 1 is arranged in a different orientation than the one or more than one clip 1 that was mounted in step a) above;
- d) mounting said one or more than one further clip 1 to the frame 3 by arranging one or more than one fastener 13 in an aperture 12 that is freely accessible above the upper longitudinal side of the board 2, to thereby hold the board 2 by said further clip 1 on an upper longitudinal side thereof and mount said board 2 to the frame 3 by said one or more than one clip 1 and said one or more than one further clip 1; and
- e) repeating steps b), c) and d) to mount further boards 2 to the frame 3.

[0041] In Figure 2, the two clips 1 are arranged in different orientations. More in particular, the lower clip 1 in Figure 2 is shown in the orientation conform Figure 1, whereas the upper clip 1 in Figure 2 is mounted in an upside down orientation relative to the lower clip 1. In both orientations, one or more than one aperture 12 is readily accessible to allow the user to arrange a fastener 13 therethrough and mount the clip 1 to the frame 3. Thus, by virtue of the plurality of apertures 12, that are

divided over the first section 5 and the second section 7, the clip 1 allows the user to apply said clip 1 in different orientation. As such, the clip 1 according to the invention provides increased versatility. More in particular, as also shown in Figure 2, this allows the clip 1 according to the invention to be arranged in any desired orientation, while guaranteeing that an aperture 12 in a section facing away from the previously mounted board 2, is freely accessible for mounting the clip to the frame 3. In Figure 2, the lower clip 1 is arranged on the lowermost board 2 in the lower layer 22 in an orientation wherein the aperture 12, 12-1 in the first section 5 of the clip 1 where arranged above the lowermost board 2. This allowed a user to arrange fastener 13 through the apertures 12, 12-1. In the successive step, two boards 2 were arranged in the middle layer 23 of Figure 2. It is noted that the orientation of the lower clip 1 allowed each of the two boards 2 in the middle layer 23 to be supported by a dedicated hook of the clip 1. Some jurisdictions require that one hook may only engage with one board 2 at the same time, and the design of the clip 1 of the present invention provides the required versatility to use said clip 1 in multiple orientations. Once the two boards 2 in the middle layer 23 are arranged, the upper clip 1 is brought into engagement with the two boards 2 of the middle layer 23. The upper clip 1 is arranged upside down relative to the lower clip 1, and consequently it is again satisfied that one hook 9 of the clip 1 only engages one respective board 2 at the same time. For the upper clip 1, the aperture 12 12-1 in the second section 7 is covered by the boards 2 of the middle layer 23, but the second apertures 12, 12-2 in the second section 7 of the clip 1 are now freely accessible. Fasteners 13 are arranged through these apertures 12, 12-2 to also mount the upper clip 1 to the frame 3. In a next step also the board 2 of the uppermost layer 24 of Figure 2 may be arranged. The skilled person will understand that - what has been described with reference to Figure 2 in a horizontal orientation - may be applied as well to a vertical orientation, i.e. a situation 90° rotated relative to Figure 2.

[0042] The step of mounting said one or more than one clip 1 or said more than one further clip 1 comprises the step of choosing an orientation of said clip 1 that satisfies the condition that each of the plurality of hooks 9 of a respective clip 1 engages only one board 2.

Optionally, in accordance with a further aspect of the present disclosure, the clip 1 is provided with a protrusion of specific shape, so as to allow a user to arrange a fastener 13 therethrough and thereby mount the plate 4 to the frame 3. Particularly, the protrusion is provided with a specific shape, so as to allow to place a head of a nail gun around the first aperture 12, 12-1. Moreover, in accordance with a preferred implementation of said further aspect of the disclosure, at least one longitudinal protrusion 17 is arranged in the same section of the first section 5 and the second section 7 as the first aperture 12-1, at a minimum offset relative to the first aperture of at least 4 mm to provide an unobstructed area around the first aperture 12-1 that allows a user to place a head of a nail

gun. In Figure 1, a circle shown in dashed lines indicates an unobstructed area A that may be a contact surface with a (not shown) head of a (not shown) nail gun. The minimum offset guarantees that there is sufficient place to place the head of the nail gun. This contact area A may be provided with a texture to provide additional grip between the tool, i.e. the head of the nail gun, and the clip 1. In this way, the chance of the tool slipping away may be significantly reduced, resulting in a more secure and safe use of the tool, i.e. the nail gun. In addition, there may be visual markings such as 'crosshair' like lines that are pressed or engraved to facilitates the alignment between nail gun head and the aperture 12. It is deemed advantageous, but not strictly necessary according to this further aspect of the disclosure, that there are at least three apertures 12 arranged in the plate 4. Further features discussed with respect to the first aspect of the invention may also be applicable as embodiments of the clip according to the second aspect of the disclosure.

[0043] The at least one longitudinal protrusion 17 that is arranged in the same section of the first section 5 and the second section 7 as the first aperture 12-1, is arranged at a maximum offset relative to the first aperture of at most 12 mm to provide a support that allows the user to support the head of the nail gun for driving a nail through the first aperture 12-1. In the shown embodiment, the protrusion 17 is arranged in the first section 5. The maximum offset guarantees that a user may rest a (not shown) head of a (not shown) nail gun against the protrusion 17 and thereby support the nail gun in an approximate alignment with the first aperture 12-1. In this way, a user may easily align the nail gun for driving a fastener 13 through the first aperture 12-1.

[0044] The protrusion 17 may have a dual purpose of supporting a nail gun on the one hand, and providing stiffness to the plate 4 of the clip 1 on the other hand. In view of strengthening the plate 4 of the clip 1, the at least one longitudinal protrusion 17 preferably crosses the imaginary line I that divides the plate 4 into the first section 5 and the second section 7. The at least one longitudinal protrusion 17 preferably extends oblique relative to at least one of the first longitudinal side 6 and the second longitudinal side 8 of the plate 4. In this way, the protrusion 17 may add stiffness to the plate 4 in the longitudinal direction 15, as well as in the width direction 21.

[0045] The at least one protrusion 17 comprises or defines a shape enclosing an obtuse angle α . The at least one protrusion 17 preferably comprises or defines a Y-shape, V-shape or truncated V-shape. More in particular and even more preferably, a single protrusion defines a Y-shape, V-shape or truncated V-shape. A single protrusion 17 provides additional strength relative to a plurality of independent protrusions.

[0046] In the shown embodiment, a single protrusion 17 defines a Y-shape. The legs 18 of the Y-shape enclose the obtuse angle α . On the one hand, the distance of the legs 18 relative to the first aperture 12-1 is large enough to provide sufficient place for safely positioning a head

of a nail gun. However, on the other hand, the distance of the legs 18 relative to the first aperture 12-1 is also small enough to support the head of the nail gun. More in particular, the user may support the head of a (not shown) nail gun simultaneously against both legs 18-1, 18-2 of the Y-shape, that form opposing segments of the longitudinal protrusion 17, for aligning the nail gun for driving a fastener 13 through the first aperture 12-1. In this way, the longitudinal protrusion allows the user to easily and securely align the nail gun with the first aperture 12-1, thereby facilitating safe use. Moreover, the Y-shape at the same time also provides significant strength to the plate 4 by virtue of the two legs 18 that extend oblique relative to at least one of the first longitudinal side 6 and the second longitudinal side 8 of the plate 4, while said legs 18-1, 18-2 also cross the imaginary line I. The short leg of the Y-shaped protrusion 17 provides strength and stiffness to the second section 7. A Y-shaped protrusion 17 therefore offers a synergistic effect by providing sufficient space around the first aperture 12-1, providing a support for a head of a nail gun. It even guarantees that further apertures 12-2 may be arranged according to the first aspect.

[0047] In the shown embodiment, the first aperture 12-1 is arranged in the first section 5 of the plate 4. The at least one protrusion 17 is absent in an area of the plate 4 between the first aperture 12-1 in the first section 5 and a closest distance to the first longitudinal side 6 of the plate 4. The at least one protrusion 17 is arranged in an area of the plate 4 between the first aperture 12-1 in the first section 5 and the imaginary line I halfway the width W of the plate 4. It is explicitly mentioned that the positioning of the protrusion is not limited to the closest distance, i.e. not necessarily directly between, but also encompasses oblique directions towards the imaginary line. The Y-shaped protrusion 17 thus also fulfills this condition.

[0048] In line with the first aspect above, the clip 1 according to the second aspect may additionally comprise one or more than one further aperture 12-2, wherein the first aperture 12-1 and the one or more than one further aperture 12-2 define a plurality of apertures 12 that are distributed in a length direction 15 of the plate 4.

[0049] The first aperture 12-1 is arranged in one of the first section 5 and the second section 7, and is preferably arranged substantially halfway the length L of said respective section 5, 7. The one or more than one further aperture 12-2 preferably comprises at least two further apertures 12-2, and the other of the first section 5 and the second section 7 is divided halfway the length L thereof in a first subsection 7-1 and a second subsection 7-2 that each comprise at least one of the at least two further apertures 12-2.

[0050] The at least one protrusion is absent in an area of the plate between the one or more than one further aperture in the second section and a closest distance to the second longitudinal side of the plate.

[0051] The plurality of hooks 9 comprises at least three

hooks 9 that are distributed in the length direction 15 of the plate 4. At least one hook 9a of the plurality of hooks 9 comprises an opening 16 that is directed towards the first longitudinal side 6 of the plate 4, and defining a hook of a first type (9a). At least one hook 9b of the plurality of hooks 9 comprises an opening 16 that is directed towards the second longitudinal side 8 of the plate 4, and defining a hook of a second type 9b.

[0052] In the shown embodiment, one of the at least one further aperture 12-2 that is arranged in the first subsection 7-1 is arranged substantially between one of the hooks of the first type 9a and the second longitudinal side 8 of the plate 4. Likewise, one of the at least one further aperture 12-2 that is arranged in the second subsection 7-2 is arranged substantially between one of the hooks of the first type 9a and the second longitudinal side 8 of the plate 4. More in particular, the further aperture 12-2 in the first subsection 7-1 and the second subsection 7-2 are arranged directly between the hook of the first type 9a in the respective sub-section 7-1, 7-2, and the second longitudinal side 8 of the plate 4.

[0053] The at least one aperture 12-1 that is arranged in the first section 5 is arranged substantially between at least one hook of the second type 9b and the first longitudinal side 6 of the plate 4. In the embodiment of Figure 1, the first aperture 1 is arranged substantially between two hooks of the second type 9b and the first longitudinal side 6 of the plate 4.

[0054] The clip 1 is used for mounting boards 2, in particular cementitious boards, to a frame 3. More in particular, said use may comprise the steps of:

- positioning the clip 1 relative to the frame 3;
- supporting a tool, in particular a nail gun, against a longitudinal protrusion 17 of said clip 1 and aligning said tool with a first aperture 12-1 of said clip 1; and
- driving a fastener 13 with said tool through the first aperture 12-1 and thereby mounting said clip 1 to the frame 3.

[0055] The above described embodiment is intended only to illustrate the invention and not to limit in any way the scope of the invention. Accordingly, it should be understood that where features mentioned in the appended claims are followed by reference signs, such signs are included solely for the purpose of enhancing the intelligibility of the claims and are in no way limiting on the scope of the claims. The scope of protection is defined solely by the following claims.

Claims

1. Clip (1) configured to mount boards (2), in particular cementitious boards or sidings of wood or composite, to a frame (3), said clip comprising:

- a plate (4) having a length (L) and a width (W),

wherein an imaginary line (I) halfway the width divides the plate into a first section (5) extending from the imaginary line to a first longitudinal side (6) of the plate, and a second section (7) extending from the imaginary line to a second longitudinal side (8) of the plate;

- a plurality of hooks (9) extending from a front surface (10) of the plate and configured to engage with an edge (11) of a board;

- at least three apertures (12) that are arranged in the plate (4) and allow a user to selectively arrange a fastener (13) through one or more than one aperture (12) and mount the plate (4) to the frame (3);

- wherein the plurality of apertures (12) is distributed in a length direction (15) of the plate (4);

- wherein at least one aperture (12, 12-1) is arranged in one of the first section (5) and the second section (7); and

- wherein the other of the first section (5) and the second section (7) is divided halfway the length (L) thereof in a first subsection (7-1) and a second subsection (7-2) that each comprise at least one aperture (12, 12-2).

2. Clip according to claim 1, wherein the at least one aperture (12, 12-1) that is arranged in one of the first section (5) and the second section (7) is arranged substantially halfway the length (L) of said respective section; and

- wherein the other of the first section (5) and the second section (7) is the section that is divided halfway the length (L) thereof in the first subsection (7-1) and the second subsection (7-2) that each comprise at least one aperture (12, 12-2).

3. Clip according to claim 1 or 2, wherein the plurality of hooks (9) comprises at least three hooks (9) that are distributed in the length direction (15) of the plate (4), wherein:

- one or more than one hook (9, 9a) of the plurality of hooks (9) comprises an opening (16) that is directed towards the first longitudinal side (6) of the plate (4), and defining a hook of a first type (9a); and

- one or more than one hook (9, 9b) of the plurality of hooks (9) comprises an opening (16) that is directed towards the second longitudinal side (8) of the plate (4), and defining a hook of a second type (9b).

4. Clip according to claim 3, wherein at least one of:

- one of the at least one aperture (12, 12-2) that is arranged in the first subsection (7-1) is ar-

- ranged substantially between one of the hooks of the first type (9, 9a) and the second longitudinal side (8) of the plate (4); and
- one of the at least one aperture (12, 12-2) that is arranged in the second subsection (7-2) is arranged substantially between one of the hooks of the first type (9, 9a) and the second longitudinal side (8) of the plate (4).
5. Clip according to claim 3 or 4, wherein at least one aperture (12, 12-1) that is arranged in the first section (5) is arranged substantially between at least one hook of the second type (9, 9b) and the first longitudinal side (6) of the plate (4). 5
 6. Clip according to one or more than one of the foregoing claims, comprising one or more than one longitudinal protrusion (17) extending outward relative to the front surface (10) of the plate (4). 10
 7. Clip according to claim 6, wherein said protrusion (17) is absent in an area of the plate (4) between the at least one aperture (12, 12-1) in the first section (5) and a closest distance to the first longitudinal side (6) of the plate (4). 15
 8. Clip according to claim 6 or 7, wherein said one or more than one protrusion (17) is absent in an area of the plate (4) between the at least one aperture (12, 12-2) in the second section 7 and a closest distance to the second longitudinal side (8) of the plate (4). 20
 9. Clip according to claim 7 or 8, wherein said one or more than one protrusion (17) is arranged in an area of the plate (4) between the at least one aperture (12, 12-1) in the first section (5) and the imaginary line (l) halfway the width (W) of the plate (4), wherein said one or more than one protrusion (17) defines a support configured to support a tool, in particular a nail gun, to arrange a fastener (13) through the aperture (12, 12-1) to mount the plate (2) to the frame (3). 25
 10. Clip according to one or more than one of claims 6-9, wherein the one or more than one protrusion (17) comprises a shape enclosing an obtuse angle α . 30
 11. Clip according to one or more than one of claims 6-10, wherein the one or more than one protrusion (17) comprises a Y-shape, V-shape or truncated V-shape. 35
 12. System (20), comprising 40
 - a frame (3); and
 - a plurality of boards (2), in particular cementitious boards, that are mounted to the frame (30)
- using a plurality of clips (1) according to one or more than one of claims 1 to 11.
13. Use of a clip according to one or more than one of claims 1 to 13, for mounting boards (2), in particular cementitious boards or sidings of wood or composite, to a frame (3). 45
 14. Use of a clip according to claim 13, comprising the steps of: 50
 - a) mounting one or more than one clip (1) to the frame (3);
 - b) arranging a board (2), in particular a cementitious board, with a first longitudinal side thereof in engagement with at least one of the plurality of hooks (9) of the one or more than one clip (1), to thereby support the board (2) at the first longitudinal side thereof;
 - c) arranging one or more than one further clip (1) at an opposite longitudinal side of the board (2), wherein the one or more than one further clip (1) is arranged in a different orientation than the one or more than one clip (1) that was mounted in step a) above;
 - d) mounting said one or more than one further clip (1) to the frame (2) by arranging one or more than one fastener (13) in an aperture (12) that is freely accessible past the opposite longitudinal side of the board (2), to thereby hold the board (2) by said further clip (1) at the opposite longitudinal side thereof and mount said board (2) to the frame (3) by said one or more than one clip (1) and said one or more than one further clip (1); and
 - e) repeating steps b), c) and d) to mount further boards (2) to the frame (1).
 15. Use of a clip according to claim 13 or 14, wherein the step of mounting said one or more than one clip (1) or said more than one further clip (1) comprises the step of choosing an orientation of said clip (1) that satisfies the condition that each of the plurality of hooks (9) of a respective clip (1) engages only one board (2). 55

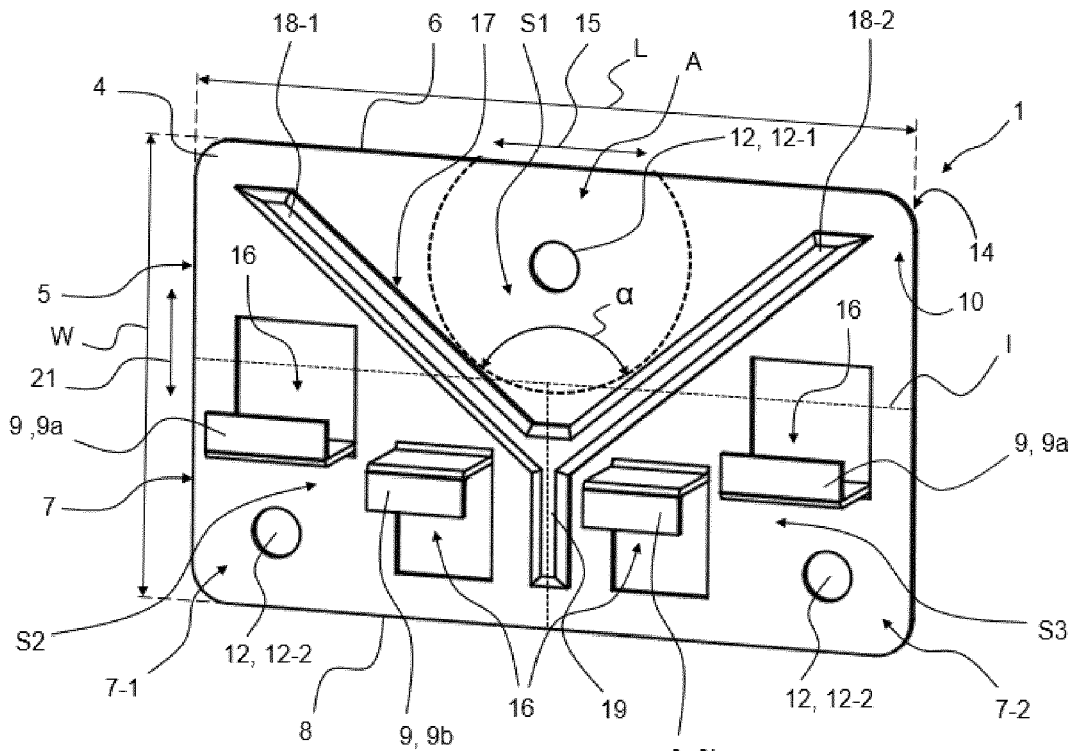


Fig. 1

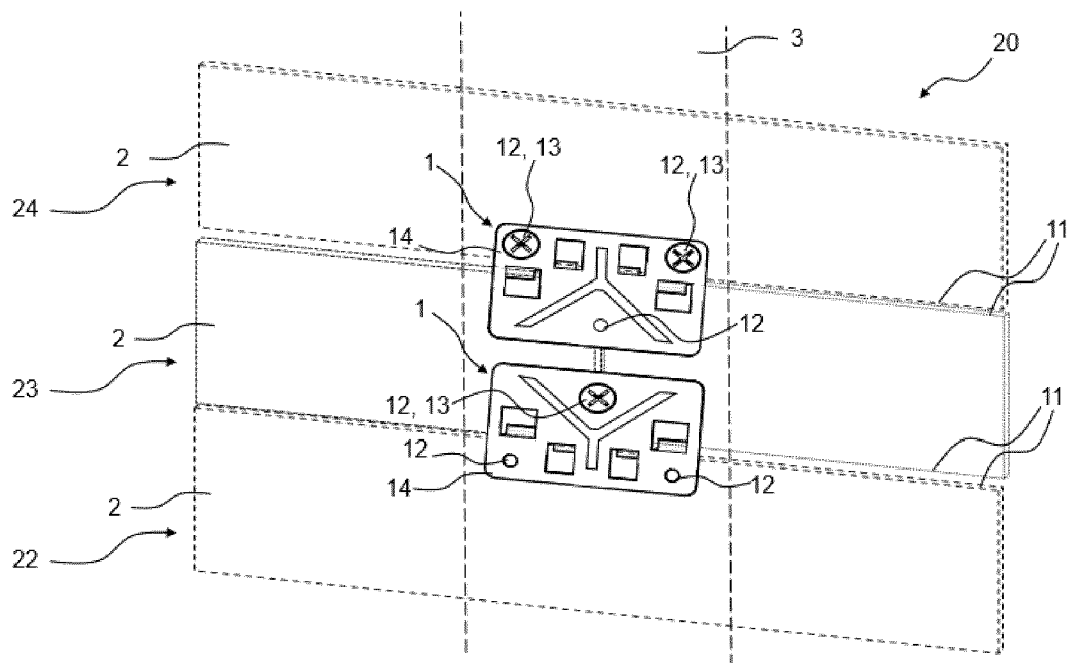


Fig. 2



EUROPEAN SEARCH REPORT

Application Number

EP 23 16 0147

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	US 6 279 286 B1 (ICHIHASHI MAMORU [JP]) 28 August 2001 (2001-08-28)	1-8, 12-15	INV. E04F13/08
A	* figures 1, 8 *	9-11	
	-----		ADD. E04F13/14
X	EP 2 947 233 A1 (ETERNIT NV [BE]) 25 November 2015 (2015-11-25)	1-6, 8, 12, 13	
A	* figures 5, 7 *	9-11	

The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			E04F
Place of search			Examiner
Munich			Fournier, Thomas
Date of completion of the search			
1 August 2023			
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			
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 EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 23 16 0147

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
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01-08-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6279286	B1	28-08-2001	NONE
EP 2947233	A1	25-11-2015	DK 2947233 T3 12-10-2020
		EP 2947231 A1 25-11-2015	
		EP 2947233 A1 25-11-2015	
		LT 2947233 T 25-09-2020	
		PL 2947233 T3 11-01-2021	