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(54) **CORNER JOINT**

(57) A corner joint 10 for a log building, by which a solid corner log can be joined to a thinner wall log. The corner joint 10 consists of wall elements 2-1, 2-2 stacked on top of each other and intersecting each other at a corner of the building, as well as of corner elements 1-1, 1-2, wherein each corner element 1-1, 1-2 is adapted to interlock the two wall elements 2-1, 2-2, stacked on top of each other and intersecting each other at a corner of the building, by means of locking means, such as cavities 31, 31a, 32 and projections 41, 42, and wherein the thickness of the corner elements 1-1, 1-2 is the thickness of the corresponding wall elements 2-1, 2-2 multiplied by at least one and a half.

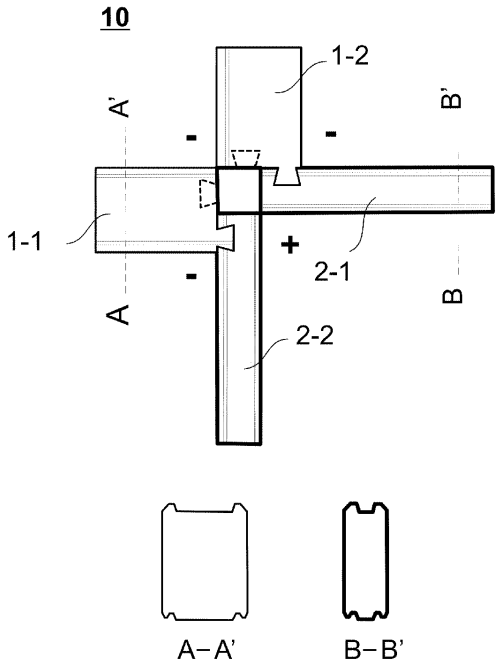

Figure 1a

EP 2 937 484 A1

Description

TECHNICAL FIELD

[0001] The invention relates to corner joints in a log building. Especially, the invention relates to a corner joint structure as defined in the preamble of claim 1, enabling a solid corner log to be joined to a thinner wall log. The invention also relates to a method of joining construction logs together to form said corner joint.

BACKGROUND OF THE INVENTION

[0002] Environmental friendliness and energy efficiency are typical of log construction. Log buildings have traditionally been constructed with corner notches which are corner joints between logs. A corner joint structure is implemented with logs stacked on top of each other and having their ends intersecting each other at a corner. Long corner or double-notched corner solutions, in which the ends of the logs project, from the corner, outside the wall line are still popular in log construction because of their traditional and grand look, as well as because of their durability and non-distortability.

[0003] However, it is often desirable to make a building constructed with thinner logs or boards look like as if it was constructed with solid logs. This solution is economically more advantageous and allows additional insulation to be put on the inside of the building.

[0004] A corner joint for a wooden building, allowing an insulated double wall to be joined to an outer solid-wood corner, is known from Patent specification FI104197 (Hautala). The outer corners are made from separate intersecting corner elements and lock the inner walls in place by means of a notch arrangement. Since the solution is dimensioned for joining insulated double walls together, it is not applicable where it is desired to insulate a building in some other way, such as with an additional insulation frame.

[0005] Patent specification FI 60900 (Mårtenson) discloses a house structure solution for making a house constructed with thinner wood boards look like as if it was constructed with solid logs forming the wall thickness. According to this solution, it is possible to cut the thicker log corners to form a joint to a corner post, from which post thinner wood boards are joined to an opposed log corner, having an insulation layer between them. The solution cannot be implemented without a corner post.

[0006] A corner joint solution for joining thinner wall boards to thicker corner elements is known from patent specification US 4 503 647 (Post). The corner elements are separate intersecting corner elements. As the wall boards are fixed to the corner elements along a grooved edge on the inside of the corner element, the wall boards themselves do not intersect each other. Said corner assembly is reinforced, for example, by a steel wire, since, if not reinforced, it can be unstable and weak. The corner joint according to this solution is complicated and necessitates both the corner logs and the wall logs to be specially dimensioned. The applicability of said corner joint solution to detached houses, for example, is still questionable because of its insufficient rigidity.

[0007] The problem with the known solutions, such as the solutions disclosed in FI 104197 and US 4 503 64, is that they are complicated and therefore involve additional expenses in the manufacture of the corner and wall parts. The solutions disclosed in FI 104197 and FI 60900, instead, suffer from the drawback that they do not support a single-wall structure, thus making it necessary to use insulated double walls.

[0008] There is still a need of a simple, functional and inexpensive corner joint solution for joining thicker beams to thinner boards, in order to construct a traditional log house with thinner wall boards and to make the log house look like a solid-log house. It is also desired that the corner joint is rigid and durable, also without any iron fasteners.

SUMMARY OF THE INVENTION

[0009] The present invention aims at eliminating the above-mentioned problems related to the construction of a steady log building with thinner wall boards while keeping the traditional massive solid-log corners.

[0010] Thus, an objective of the present invention is to provide a log house corner joint which is rigid, durable and simple to make. A second objective of the invention is provide a method of joining construction logs of a different thickness together to form said corner joint. The objectives of the invention are achieved by means of the features disclosed in the independent claims.

[0011] The corner joint according to the invention is characterized in what is set forth in the characterizing part of the independent claim 1. The corner joint according to the invention is mainly characterized in that the corner joint consists of thinner wall elements stacked on top of each other and intersecting each other at a corner of the building, as well as of solid corner elements, each corner element being adapted to interlock the two wall elements, stacked on top of each other and intersecting each other at a corner of the building, by means of locking means; according to the invention, the thickness of the corner elements is the thickness of the corresponding wall elements multiplied by at least one and a half.

[0012] The method according to the invention is characterized in what is set forth in the characterizing part of the independent claim 9.

[0013] The dependent claims disclose different preferred embodiments of the invention.

[0014] In a corner joint according to some embodiment, each corner element is provided as an elongation of a parallel wall element so, that the combination of one corner element and one wall element forms a continuous combined structure along the wall line of the building. It is preferable that the corner element joined to the wall element/elements projects outside the building line, forming a so-called long corner.

[0015] In a corner joint according to some embodiment, each corner element and each wall element preferably comprises locking means, such as a projection and a cavity, wherein the cavity of both corner elements is adapted to fit together with the projection of the coplanar and parallel wall element, and wherein the projection of both corner elements is adapted to fit in the cavity of the overlying, intersecting wall element.

[0016] In a corner joint according to some embodiment, the cavity and the projection of both corner elements are provided on the surface of the corner element facing the interior of the building; and the cavity and the projection of both wall elements are provided on the surface of the wall element facing the exterior of the building, the projection being positioned at the end of the wall element, and the cavity being positioned in the side of the wall element facing the exterior of the building, respectively.

[0017] In a corner joint according to some embodiment, each wall element is dimensioned to form a mirror image of the intersecting wall element, in a longitudinal section, and each corner element to be joined to the above-mentioned wall elements is dimensioned to form a mirror image of the corner element to be joined to the intersecting wall element, in a longitudinal section.

[0018] In a corner joint according to some embodiment, each corner element comprises a cavity cut into the surface of the corner element facing the interior of the building, the cavity running, in a transverse section, through the most of the corner element, terminating in the vicinity of its upper face and forming a blind end.

[0019] In a corner joint according to some other embodiment, the cavity of each corner element runs, in a transverse section, through the entire corner element, penetrating it's upper and lower faces.

[0020] The corner element according to the different embodiments offers a number of advantages. Firstly, the corner joint of the invention allows a thinner wall log to be joined to a thicker corner log, the solution resulting in a double-joint log corner and in a tight, rigid and dimensionally accurate log joint. This makes it possible to obtain a particularly rigid and stable log construction by fastening a log of a log wall to an underlying or overlying log of an intersecting wall, and to a log corner. Thus, the corner joint of the invention provides a rigid and durable log joint because, in this joint, the intersecting members are constituted by wall logs, whereas, in a prior art solution, the intersecting members are constituted by corner posts. This rigid corner structure makes it easier and faster to install an additional insulation frame on the inside of the building. The solution of the invention allows a log house to be constructed with thinner wall logs and to make the wall structure look like, on the outside, as if it was constructed with solid logs. A common frame structure and/or an additional insulation layer, (a so-called LES structure) can be then installed on the inside of the log house. Said additional insulations and/or additional insulation frames can be chosen considering the building regulations and/or the needs of the constructor/client.

[0021] The invention also contributes to energy-efficient construction. It is less expensive to construct a wall structure with thinner logs, to which said common additional insulation frame and/or additional insulation layer (LES structure) is added, and with solid-log corners than with solid logs alone. The solution of the invention provides a particularly tight and stable wall and corner structure without any additional fasteners and/or a corner post. The corner joint of the invention enables a particularly energy-efficient wall structure, together with an additional insulation frame, and meets well the increasingly stricter demands for heat insulation and tightness.

[0022] Since said corner joint is provided in several corner and wall sections which are simple to manufacture, by machining, for example, the manufacturing costs of the corner joint are relatively low. Neither iron fasteners nor complicated notching is required to join said corner and wall sections together.

[0023] The corner joint structure according to the invention is applicable to wood construction, in particular to log construction. The corner joint is especially applicable for constructing a detached house, such as a one-family house or a summer house.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] In the following, preferred embodiments of the invention will be described with the reference to accompanying drawings, wherein

Figure 1a is a schematic top view of a corner joint 10 according to a preferred embodiment of the present invention,

Figure 1b shows combined parts of the above-mentioned corner joint 10, wherein (ii), (iv) and (i), (iii) are top views and lateral views, respectively; a plus sign denotes the interior of the building; a minus sign denotes the exterior of the building,

Figure 1c shows separate parts of a corner joint 10 according to a preferred embodiment, wherein (ii), (iv) and (i), (iii) are top views and lateral views, respectively; the plus sign denotes the interior of the building; the minus sign denotes the exterior of the building,

Figure 2a shows a corner joint 10 according to a preferred embodiment in an assembled state,

Figure 2b shows the corner joint 10 of Figure 2a, with the parts of the joint detached from each other,

Figures 2c and 2d show how to assemble the corner joint 10 of Figures 2a, 2b, obliquely from above (Figure 2c) and from above (Figure 2d),

Figure 3a is a schematic top view of a corner joint

10 according to another embodiment of the present invention,

Figure 3b shows combined parts of the corner joint 10 of Figure 3a, wherein (ii), (iv) and (i), (iii) are top views and lateral views, respectively; the plus sign denotes the interior of the building; the minus sign denotes the exterior of the building,

Figure 4a shows a corner joint 10 according to another embodiment in an assembled state,

Figure 4b shows the corner joint 10 of Figure 4a, with the parts of the joint detached from each other,

Figure 4c shows how to assemble a corner joint 10 according to another embodiment, obliquely from above,

Figures 5a and 5b show the corner elements of the corner joints 10 according to the different embodiments, from above (upper row) and obliquely from above (lower row).

DETAILED DESCRIPTION OF THE DRAWINGS

[0025] The same numerals are used to refer to the parts of the corner joint of the present invention throughout the figures accompanying this document and include the following references:

10 - a corner joint;

1-1, 1-2 - corner elements;

2-1, 2-2 - wall elements;

1, 2 - a pair/combined structure of corner- and wall elements;

3, 4, 5 - sealing and/or auxiliary locking means;

31, 31a, 32, 41, 42 - locking means, of which

31, 31a - a corner element cavity;

41 - a corner element projection;

32 - a wall element cavity;

42 - a wall element projection.

[0026] Figure 1a is a schematic top view of a corner joint 10 according to a preferred embodiment. The corner joint 10 is formed by wall elements 2-1 and 2-2, stacked on top of each other and intersecting each other in a corner of the building, and by corner elements 1-1 and 1-2.

[0027] Because the corner joint 10 consists of several parts, the term "corner joint assembly" is also applied to the corner joint 10. In this document, the terms "corner joint" and "corner joint assembly" are used as synonyms.

[0028] Preferably, the corner joint 10 is applicable for wood construction, especially log construction. In a preferred embodiment, the corner elements 1-1, 1-2 are formed by solid logs of thickness 120 to 300 mm, while the wall elements 2-1, 2-2 are formed by thinner logs of thickness 45 to 180 mm. Said wall logs can be thinner laminated logs or planed square logs, provided that solid logs can be used as the corner logs. However, the external free end of the corner element can be of any suitable thickness, depending on how grand a look is desired. According to the invention, the thickness of the corner elements 1-1, 1-2 is the thickness of the corresponding wall elements 2-1, 2-2 multiplied by at least one and a half.

[0029] Figure 1a also shows a cross-section of the outer ends of the corner elements 1-1, 1-2 along line A-A. Line B-B denotes a cross-section of the wall elements 2-1, 2-2 at a non-intersecting point of a wall of the building, such as at the middle of the wall of the building. According to some embodiment, the cross-sectional profiles A-A' of the corner elements 1-1 and 1-2 of the corner joint 10 are identical; the cross-sectional profiles B-B' of the walls 2-1 and 2-2 are identical as well. However, dimensioning and customizing certain parts of the corner joint 10 to form intersecting walls, and/or corner elements joined to the intersecting walls, of different thicknesses, in the same building, is not excluded. Thus, the corner- and/or wall elements of the same building may have different cross-sectional profiles.

[0030] The wall logs can be substantially rectangular in cross-section, while the corner logs can be rectangular, circular or nearly circular in cross-section. However, it is obvious to a person skilled in the art that both the wall logs and the corner logs may vary in shape, from rectangular to nearly circular, independently from each other. In this document, all of the elements 1-1, 1-2, 2-1, 2-2 of the corner joint 10 are shown to be substantially rectangular (Figures 1 to 5).

[0031] The corner joint assembly 10 (Figures 1a, 1b) is put together by combining two wall elements 2-1, 2-2 stacked on top of each other and intersecting each other at a corner of the building, of which each wall element is preferably prejoined to a corresponding, coplanar and parallel corner element 1-1, 1-2 to form the combined structure (1-1, 2-1), (1-2, 2-2) of Figure 1b. The corner joint 10 thus consists of two combined structures as described above, each of the structures comprising a corner element and a wall element parallel with the corner element. In Figure 1b, these combined structures, or corner- and wall element pairs, are denoted by reference numerals 1 and 2.

[0032] In this document, the term "combined structure" is used to refer to a combination of one corner element and one wall element (1, 2, Figure 1b). Said combined

structures, when stacked on top of each other, form the corner joint assembly 10 of the invention.

[0033] Figure 1b includes a top view (ii, iv) and a lateral view (i, iii), respectively, of combined structures of the corner joint 10 according to a preferred embodiment. Each corner element 1-1, 1-2 is thus provided as an elongation of a corresponding, coplanar wall element 2-1, 2-2, the combination of one corner element and one wall element thus forming the above-mentioned continuous structure 1, 2 corresponding to one log beam, following the wall line of the building.

[0034] The plus sign denotes the interior of the building, while the minus sign denotes the exterior of the building. The wall elements 2-1, 2-2 thus form intersecting walls of the building. The corner elements joined to the corresponding wall elements project outside of building line/wall line. The corner elements 1-1, 1-2 do not intersect each another.

[0035] All of the parts forming the corner joint 10 according to the preferred embodiment are described in more detail by referring to Figure 1c.

[0036] The parts of the corner joint 10, referred to as paired corner elements 1-1, 1-2 and paired wall elements 2-1, 2-2, are combined and interlocked with each other by means of locking means provided on each corner element and wall element. By locking means we refer to the projections 41, 42 and cavities 31, 32 shown in the Figure. Each corner element 1-1 and 1-2 of the corner joint 10 according to the preferred embodiment comprises several locking means, such a cavity 31 and a projection 41. Each wall element 2-1 and 2-2 of the corner joint 10 comprises corresponding locking means, such as a cavity 32 and a projection 42.

[0037] In addition, to form the corner joint 10, these corner- and wall elements are shaped in such a way that each corner element and each wall element shapewise form a mirror image of the paired corner element or wall element, along a longitudinal cross-section line. In Figure 1c, the longitudinal cross-section line is denoted by a horizontal dashed line. Figure 1c shows that the corner element 1-1 shapewise forms a mirror image of the paired corner element 1-2, while the wall element 2-1 shapewise forms a mirror image of the paired wall element 2-2.

[0038] According to some embodiment, the paired corner elements 1-1 and 2-1 are substantially the same size. According to some embodiment, the paired wall elements 2-1, 2-2 are substantially equal in thickness and width; however, the wall elements may vary in length.

[0039] In the following, the details for assembling the corner joint 10 will be explained based on Figures 2a to d.

[0040] When putting together the assembled corner joint structure 10 of Figure 2a, parallel corner- and wall elements, such as 1-1 and 2-1 (pair 1), as well as 1-2 and 2-2 (pair 2), are joined together to form the above-mentioned combined structures 1, 2. The wall elements 2-1 and 2-2 are dimensioned to form intersecting walls of the building, based on the above-mentioned mirror-image symmetry. Therefore, when the corner- and wall element pairs 1 and 2 are joined together, the corner joint 10 of Figure 2a is formed. Because the combined structures 1 and 2 are joined together at the outer ends of the intersecting wall elements 2-1, 2-2, each corner element 1-1, 1-2, having mirror-image symmetry, is joined, during the formation of the corner joint 10, to the two wall elements stacked on top of each other and intersecting each other, while each wall element 2-1, 2-2 is joined to the two above-mentioned corner elements. As an example, the corner element 1-1 (Figures 2a, 2b) is joined not only to the coplanar and parallel wall element 2-1, to form pair 1, but also to the underlying intersecting wall element 2-2. All of the parts 1-1, 1-2, 2-1, 2-2 of the corner joint assembly 10 put together are coplanar to form one log layer of the walls intersecting at the corner of the log building.

[0041] In the above description, only one building corner was formed. It is fully obvious that the above-mentioned combined structure, in order to build a rectangular house, for instance, can consist, in addition to a wall element, of several corner elements, the corner elements being fixed to both ends of the wall element.

[0042] Moreover, it is obvious to a person skilled in the art that, herein, the terms "underlying" and/or "overlying" are exemplary and that connection of these terms to the reference numerals is random. However, it is preferable that, when stacking building logs on top of each other, a combined corner- and wall element structure is interlocked with an underlying combined corner- and wall element structure.

[0043] The cavity 31 and the projection 41 of both corner elements 1-1, 1-2 of the corner joint assembly 10 are provided adjacent to each other on the corner element, on the surface facing the interior of the building (Figure 2b). The projection 42 of both wall elements 2-1, 2-2 is provided as an opposite of the cavity 31 of the coplanar and parallel corner element corresponding to the outer end of the wall element. The cavity 32 of both wall elements (Figure 2b) is located in the surface of the wall element facing the exterior of the building. Therefore, the cavity 32 serves as an opposite of a corner element of the intersecting wall, receiving the projection 41 of this corner element. In the corner joint 10, the cavity 31 of both corner elements 1-1, 1-2 is adapted to fit on the projection 42 of the coplanar and parallel wall element 2-1, 2-2; and the projection 41 of both corner elements is adapted to fit in the cavity 32 of the intersecting, overlying wall element.

[0044] Referring to Figures 2a to d, both the corner elements 1-1, 1-2 and the wall elements 2-1, 2-2 have an upper face 3 the opposite of which is a lower face. The upper face 3 of each of the above-mentioned elements is preferably dimensioned to comprise sealing and auxiliary locking means, such as elevated edge areas 4 on the upper face 3 of each of said elements, they being at least two in number on the upper face 3 of each corner- and/or wall element. It is obvious to a person skilled in the art that, to form a log wall, logs are stacked on top of

each other in such a way that the lower face of an upper log of the wall is fitted against the upper face of a lower log. Therefore, sealing grooves, for instance, are preferably provided in the lower face of said corner- and wall elements (not shown in the Figures), being dimensioned to receive the edge areas 4 of the corner joint parts in the underlying layer. Herein, the terms "upper face" and "lower face" are used to refer to both the corner element faces and the wall element faces coming into directly contact with each other while stacking log plies.

[0045] Because the intersecting end of both wall elements 2-1, 2-2 of the corner joint 10 is also dimensioned to receive the end of the transverse, intersecting wall element, these elements, in a top view, also comprise a recess 5 (Figures 2a to 2d). These sealing/auxiliary locking means 3, 4, 5 hold the corner- and wall elements of the corner joint together while the corner joint assembly 10 is put together. The corner-and wall elements in a lower log layer receive the corner- and wall elements of an upper log layer by means of said locking means 31, 32, 41, 42 and sealing means 3, 4, 5.

[0046] Figures 2c and 2d show, by the way of example, a way of joining a pair of corner-and wall elements (1-1, 2-1; pair 1) to another pair including a corner- and a wall element (1-2, 2-2; pair 2) of an intersecting wall, to form a corner joint 10. The upper pair 1 (1-1, 2-1) is slid down against the lower pair 2 (1-2, 2-2) to fit and interlock the cavities 31, 32 and projections 41, 42 with each other in the above-described manner, thus forming a corner joint 10. Said joint can be a dovetail joint, for example, wherein the projections 41, 42 of both the corner elements and the wall elements widen outwards. The joint can be implemented and, correspondingly, the locking elements can be dimensioned by following any other suitable joint technique.

[0047] In the corner joint 10 to be assembled, the cavity 31 and the projection 41 of both corner elements 1-1, 1-2, are located on the surface of the corner element facing the interior of the building (the plus sign, Figures 2a to d), while the cavity 32 and the projection 42 of both wall elements 2-1, 2-2 are located on the surfaces of the wall element facing the exterior of the building (the minus sign, Figures 2a to d) so, that the projection 42 of both wall elements 2-1, 2-2 is located at the end of the wall element facing the intersecting corner and the cavity 32 of both wall elements is located in the outer face of the wall element (the minus sign, Figures 2a to d), respectively.

[0048] Next, reference is made to Figure 5a, describing the corner elements 1-1, 1-2 of a corner joint 10 of a preferred embodiment. Each corner element 1-1, 1-2 of the corner joint 10 thus comprises, in addition to a projection 41, also a cavity 31 made by cutting off a piece of the corner element 1-1, 1-2 from the surface thereof facing the interior of the building. The cut 31 runs in a cross-sectional direction through the most of the corner element 1-1, 1-2, terminating in the vicinity of the upper face 3 and forming a blind end. Figure 5a also includes a three-dimensional detailed view of the corner element 1-1, 1-2 of the corner joint 10 according to the preferred embodiment (lower row). Because the cavity 31 of both corner elements 1-1, 1-2 is provided in the corner element without penetrating the upper face 3, the corner element 1-1, 1-2, as seen from above, looks like a solid piece (Figures 1c, 2b, 5a). In these Figures, the dashed lines indicate the cavity 31 as well as how the projection 42 is received by this cavity.

[0049] The blind cavities 31 of the corner elements 1-1, 1-2 according to the preferred embodiment, as well as the projections 42 of the wall elements 2-1, 2-2 ending up in these cavities, can be dimensioned for the above-mentioned dovetail joint technique (Figures 1, 2). In this case, the interlocking between the cavity 31 of the corner element and the projection 42 of the wall element is similar to the interlocking between the projection 41 of the corner element and the cavity 32 of the wall element. To achieve a tight, rigid and dimensionally accurate joint, the blind cavity 31, and the projection 42 of the corresponding wall element, can be made curved, for example (Figures 2c, 2d), in which case the interlocking between the cavity 31 of the corner element and the projection 42 of the wall element will differ from the interlocking between the projection 41 of the corner element and the cavity 32 of the wall element. However, the structure of the corner joint 10 according to the preferred embodiment is not restricted to the above-mentioned exemplary interlocking techniques, provided that said blind-end design of the cavity 31 is retained.

[0050] Figures 3 and 4 show another embodiment of the corner joint 10 of the present invention. The corner joint 10 of this another embodiment (Figures 3a, 3b) is substantially similar to the corner joint of the preferred embodiment. The corner joint consists of corner- and wall elements joined together in the above-described manner. To avoid repetition, the corner joint of Figures 3 and 4 will not be described in detail in this document. Instead, Figures 4b and 5b only describe those features of the corner joint 10 of this another embodiment (Figures 3, 4, 5b) that make it different from the corner joint 10 of the preferred embodiment (Figures 1, 2, 5a).

[0051] As shown in Figure 5b, each of the corner elements 1-1, 1-2 of the corner joint 10 of this another embodiment has a projection 41 and a cavity 31a made by cutting off a piece of the corner element 1-1, 1-2 from the surface thereof facing the interior of the building. Compared to the cavity 31 of the corner elements of Figure 5a, this cavity 31a runs in a transverse direction through the entire corner element 1-1, 1-2, penetrating its upper and lower faces. Therefore, a cut in the shape of the cavity 31 a and visible from above is formed in the upper face 3.

[0052] The "throughcavities" 31a running through the corner elements 1-1, 1-2 of the corner joint of this another embodiment, as well as the projections 42 of the wall elements 2-1, 2-2 ending up in said cavity, can be dimensioned by following the above-described dovetail joint

technique or in any other suitable way.

[0053] The solution shown in Figures 3, 4 and 5b, including a corner element "throughcavity", can be easier and faster to carry out by machining, for example, which preferably makes it applicable for constructing temporary residential buildings or any other inexpensive buildings. Because the corner joint solution according to the preferred embodiment (Figures 1, 2, 5a) can provide a very tight, undistorting and rigid joint, it is particularly suitable for constructing detached houses and/or permanent residential buildings, for instance.

[0054] The invention also aims at providing a method of joining log elements of a different thickness together to form a corner joint 10. The formation of the corner joint 10 comprises at least the following steps:

a) providing intersecting building-wall elements 2-1 and 2-2, as well as corresponding corner elements 1-1, 1-2;

b) joining both intersecting building-wall elements 2-1, 2-2 to the corresponding, parallel corner element 1-1, 1-2 in such a way that a projection 42 provided at the end of the wall element ends up in a cavity 31, 31 a provided in the corner element, to form continuous, combined intersecting building-wall and corner structures 1, 2.

c) stacking the continuous, combined structures 1, 2, obtained in the preceding step, on top of each other to form a building corner joint assembly 10 wherein the wall elements 2-1, 2-2 intersect each other in such a way that the cavity 31, 31a of both corner elements 1-1, 1-2 receives the projection 42 of the parallel and coplanar wall element, and a projection 41 provided on both corner elements ends up in a cavity 32 provided in the intersecting, underlying wall element.

[0055] The invention also aims at providing a log building wherein the corner joints are constituted by corner joints 10 according to any embodiment. The log building can be any detached house, such a one-family house or a summer house. What is essential is that the corner joint 10 of the invention provides a log wall structure in which the corners, as seen from the outside, look like as if they were constructed with massive solid logs, and on the inside of which any additional insulation layer, or an additional insulation frame, can be added.

[0056] It is obvious to a person skilled in the art that technical developments allow the basic idea of the invention to be carried out in many different ways. Therefore, the invention and the embodiments thereof are not restricted to the above-described examples but may vary within the scope of the claims.

Claims

1. A corner joint (10) for a log building, which corner joint is formed by wall elements (2-1, 2-2), stacked on top of each other and intersecting each other at a corner of the building, and by corner elements (1-1, 1-2), in which corner joint (10) each corner element (1-1, 1-2) is adapted to interlock the two wall elements (2-1, 2-2), stacked on top of each other and intersecting each other at a corner of the building, by means of locking means (31, 31a, 41, 32, 42), **characterized in that** the thickness of the corner elements (1-1, 1-2) is the thickness of the corresponding wall elements (2-1, 2-2) multiplied by at least one and a half, and in which corner joint each corner element (1-1, 1-2) and each wall element (2-1, 2-2) comprises a number of locking means, such as a cavity (31, 31a, 32) and a projection (41, 42), wherein the cavity (31, 31a) of both corner elements is adapted to fit together with the projection (42) provided on the parallel and coplanar wall element, and wherein the projection (41) of both corner elements is adapted to fit in the cavity (32) provided in the intersecting, stacked wall element.

2. A corner joint (10) as defined in claim 1, wherein each corner element (1-1, 1-2) is provided as an elongation of the parallel wall element (2-1, 2-2), the combination of one corner element and one wall element thus forming a continuous combined structure (1, 2) along the wall line of the building.

3. A corner joint (10) as defined in any of the preceding claims, wherein the corner element (1-1, 1-2) joined to the wall element/elements (2-1, 2-2) projects outside the building line.

4. A corner joint (10) as defined in any of the preceding claims, wherein the cavity (31, 31a) and the projection (41) of both corner elements (1-1, 1-2) are provided on the surface of the corner element facing the interior of the building; and wherein the cavity (32) and the projection (42) of both wall elements (2-1, 2-2) are provided on the surfaces of the wall element facing the exterior of the building, the projection (42) being located at the end of the wall element and the cavity (32) being located in the side of the wall element facing the exterior of the building.

5. A corner joint (10) as defined in any of the preceding claims, wherein each wall element (2-1, 2-2) is dimensioned to form a mirror image of the intersecting wall element (2-2, 2-1), in a longitudinal section, and wherein each corner element (1-1, 1-2) to be joined to the above-mentioned wall elements is dimensioned to form a mirror image of the corner element (1-2, 1-1) to be joined to the intersecting wall element, in a longitudinal section.

6. A corner joint (10) as defined in any of the preceding claims, wherein each corner element (1-1, 1-2) comprises a cavity (31) cut into the surface of the corner element facing the interior of the building, the cavity (31) running, in a transverse section, through the most of the corner element (1-1, 1-2), terminating in the vicinity of its upper face and forming a blind end.

7. A corner joint (10) as defined in any of the preceding claims 1 to 6, wherein each corner element (1-1, 1-2) comprises a cavity (31a) cut into the surface of the corner element facing the interior of the building, the cavity (31 a) running, in a transverse section, through the entire the corner element (1-1, 1-2), penetrating its upper and lower faces.

8. A corner joint (10) as defined in any of the preceding claims, wherein the corner elements (1-1, 1-2) are logs having a thickness of 120 to 300 mm, and wherein the wall elements (2-1, 2-2) are logs having a thickness of 45 to 180 mm.

9. A method of joining construction logs of a different thickness together to form a corner joint as defined in claims 1 to 9, **characterized in that** the corner joint (10) at least is formed by the following steps:

- providing intersecting building-wall elements (2-1, 2-2) as well as corresponding corner elements (1-1, 1-2);
- joining each wall element (2-1, 2-2) to the corresponding corner element (1-1, 1-2) in such a way that a projection (42) provided at the end of the wall element ends up in a cavity (31, 31 a) provided in the parallel corner element, to form paired, continuous, combined intersecting building-wall structures (1, 2).
- stacking the paired, continuous combined structures (1, 2), obtained in the preceding step, on top of each other to form an intersecting building-wall corner, in which corner the combined structures (1, 2) intersect in such a way that a projection (41) provided on both corner elements (1-1, 1-2) of the combined structures ends up in a cavity (32) provided in the wall elements of the intersecting, underlying combined structure.

10. A log building wherein the corner joints are corner joints as defined in any of claims 1 to 9.

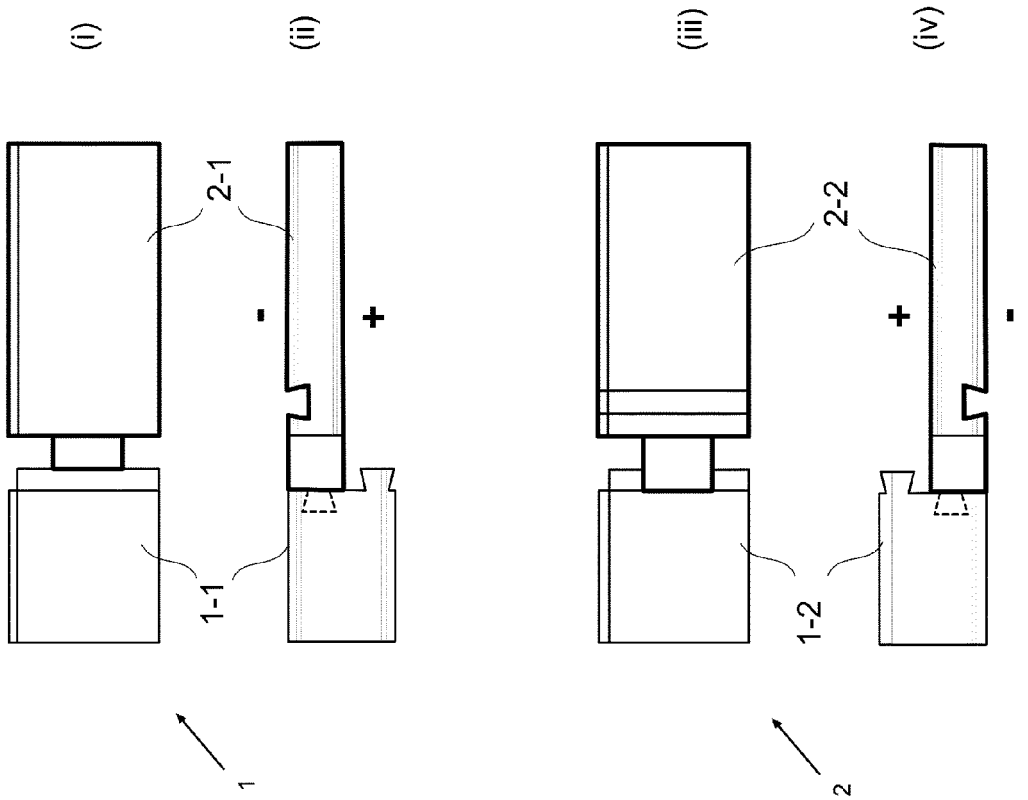

Figure 1b

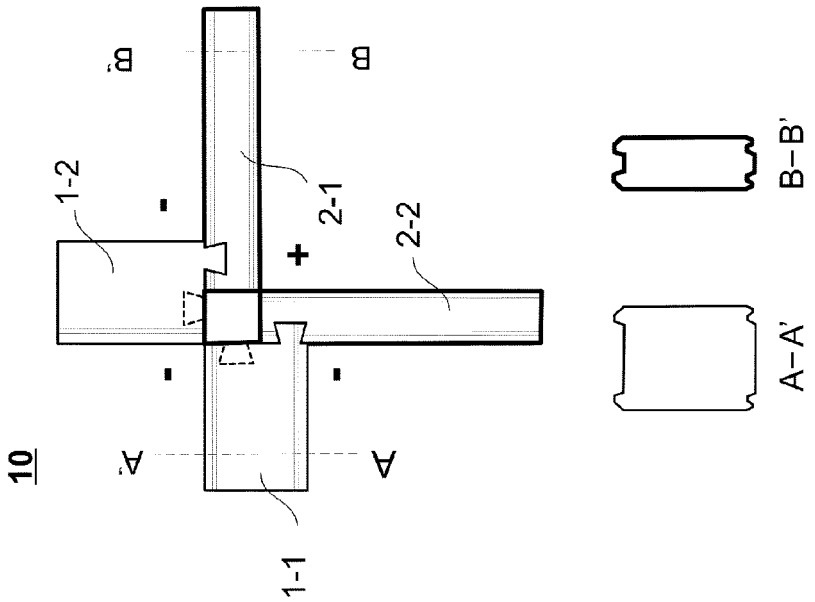

Figure 1a

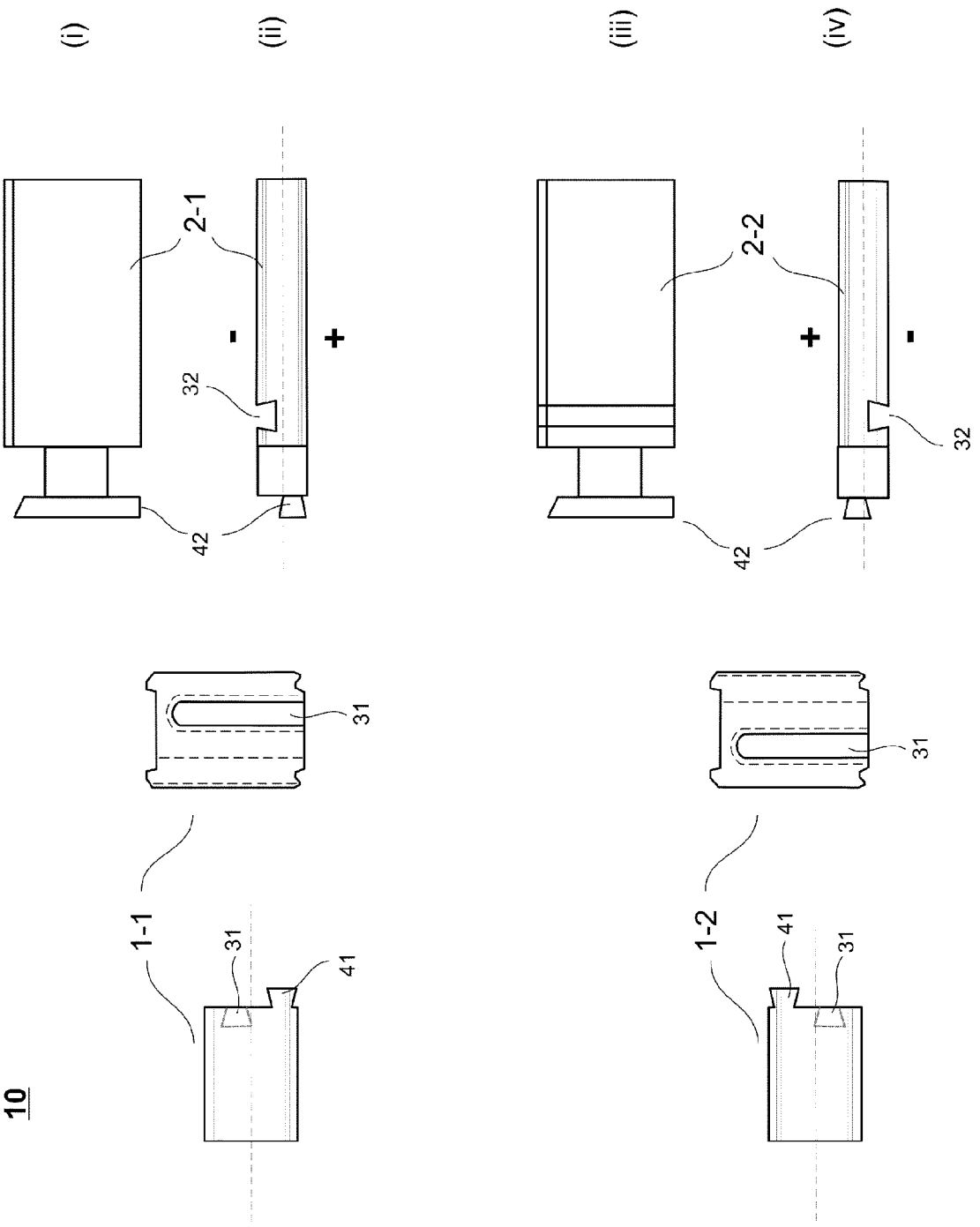

Figure 1c

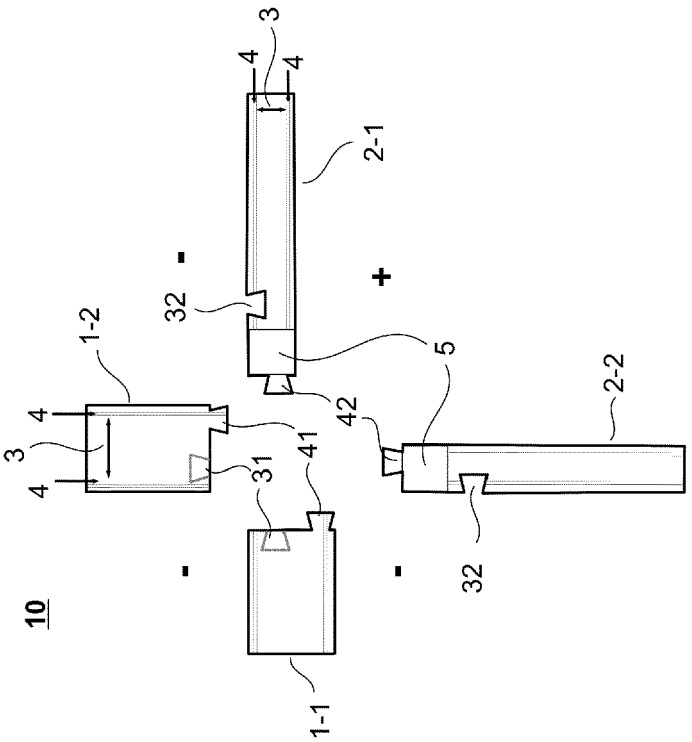

Figure 2b

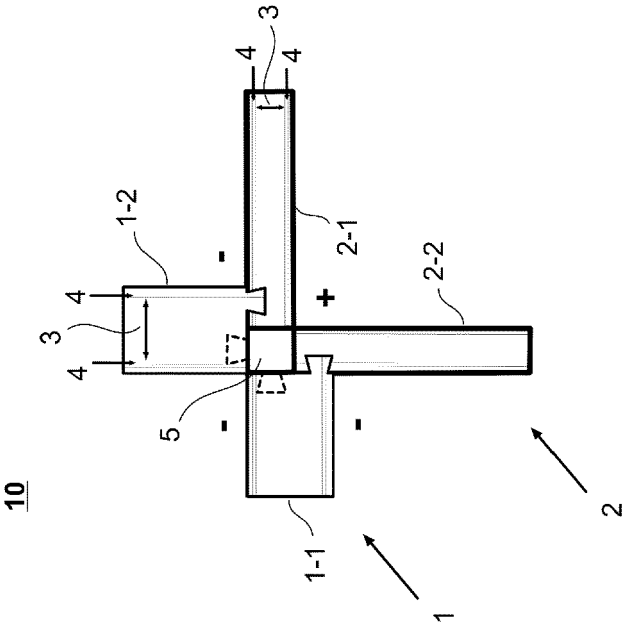

Figure 2a

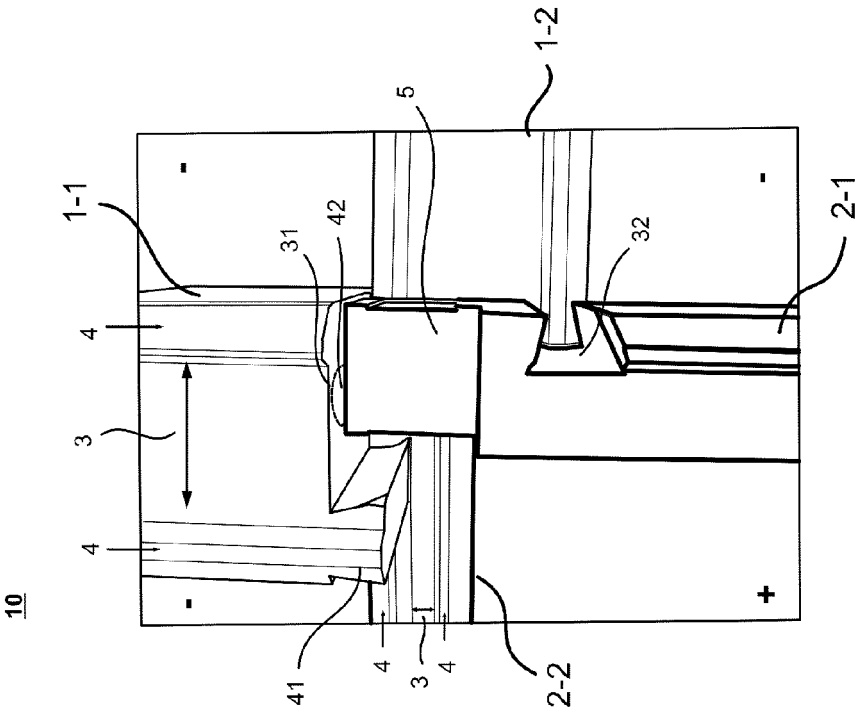

Figure 2d

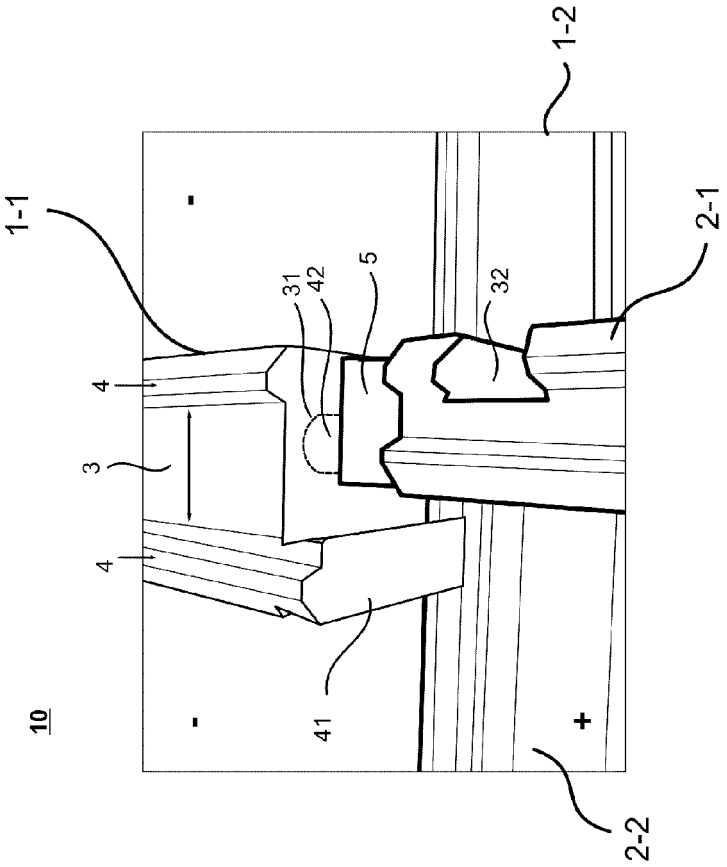

Figure 2c

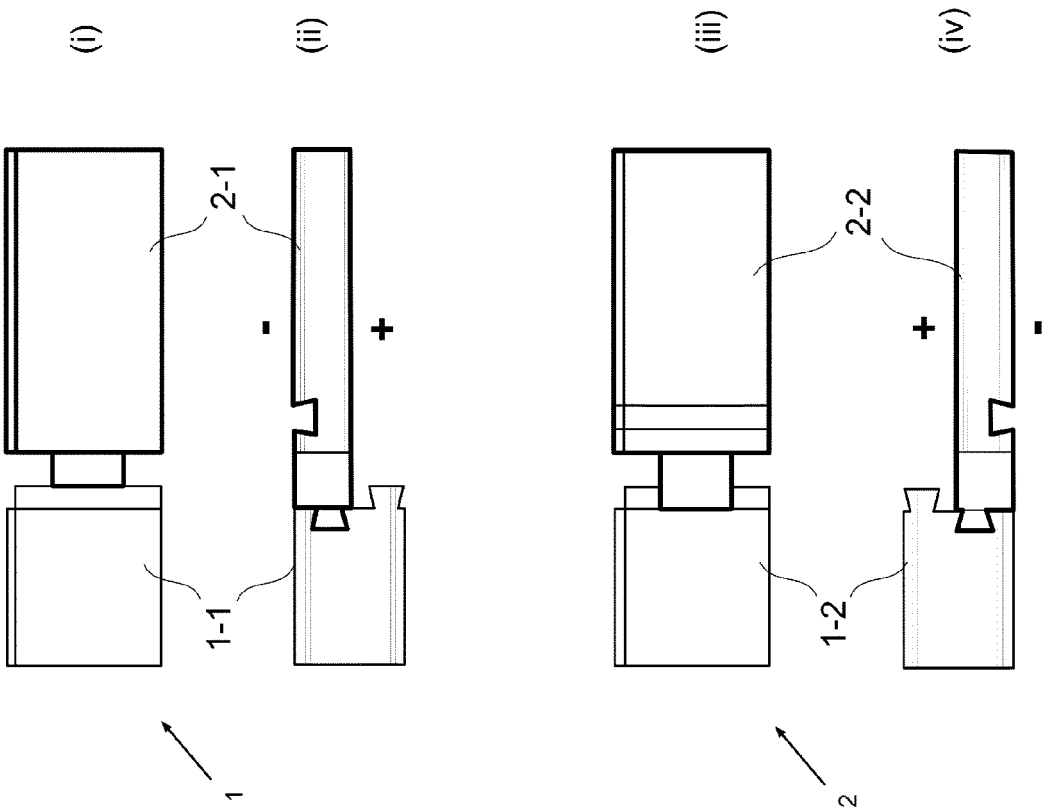

Figure 3b

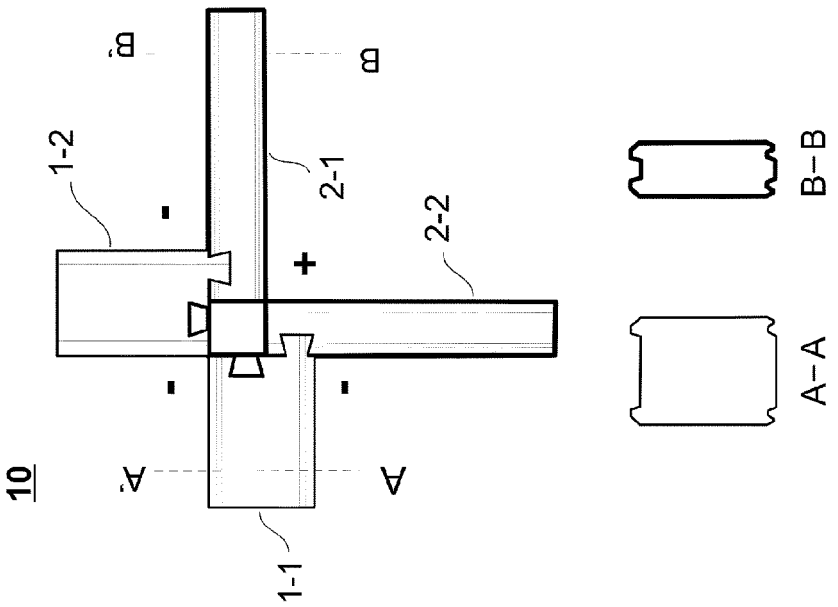

Figure 3a

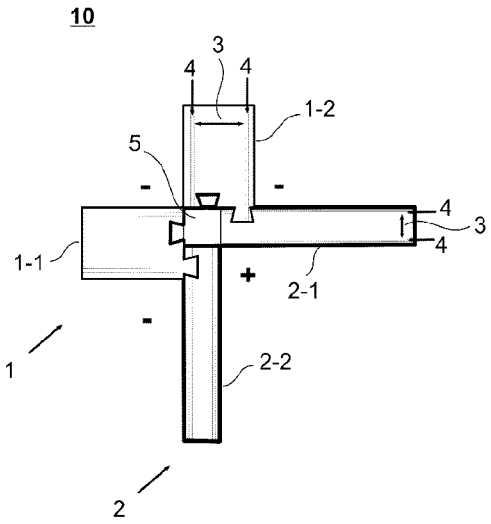

Figure 4a

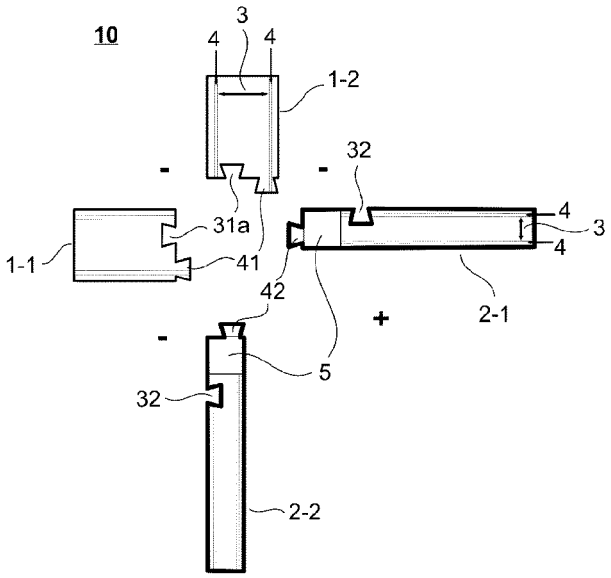

Figure 4b

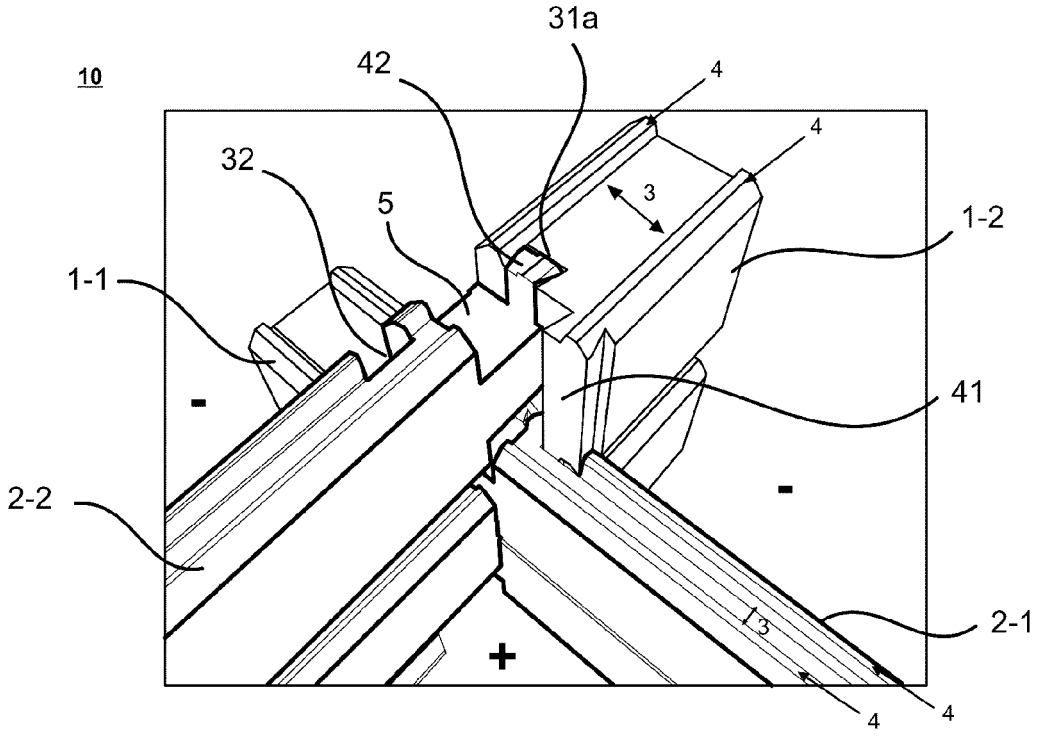

Figure 4c

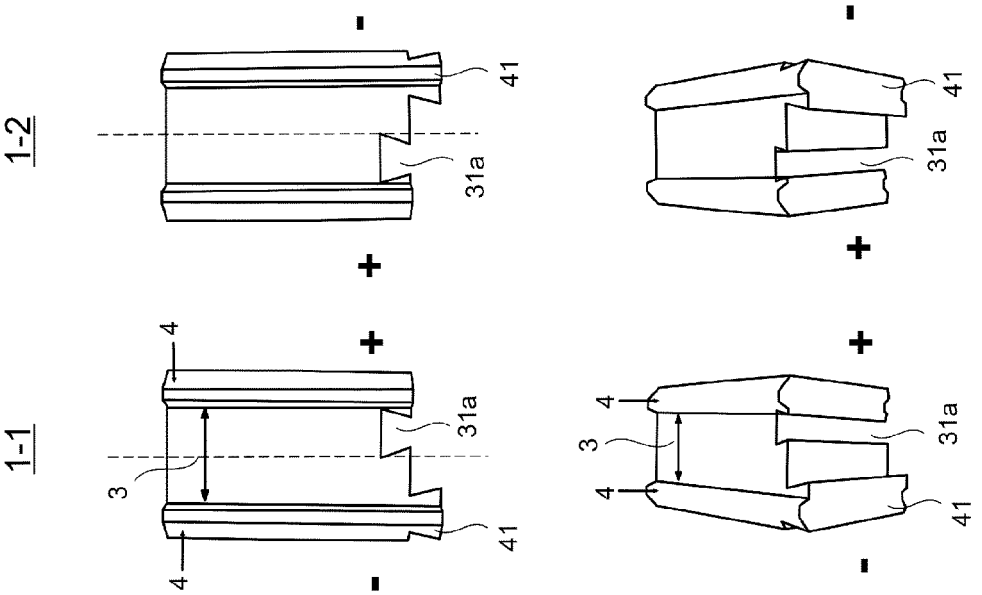

Figure 5b

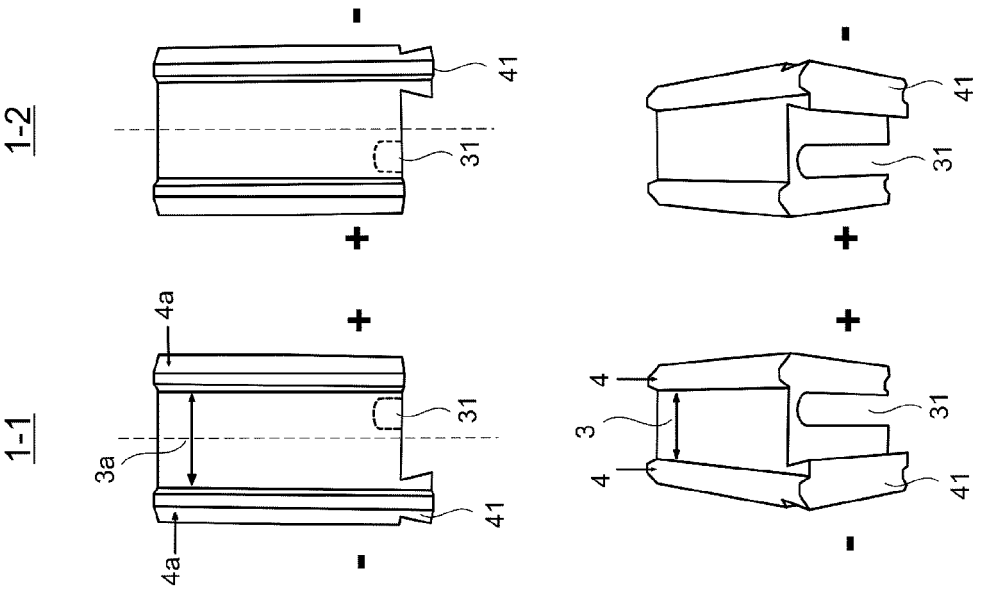

Figure 5a

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EUROPEAN SEARCH REPORT

Application Number
EP 15 16 4620

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	25 August 2015	López-García, G

CATEGORY OF CITED DOCUMENTS

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