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(54) A decay prevention plate and its method of assembling in a construction

(57) Assembly of a construction and a decay prevention plate. The construction comprises a first construction element having a first construction element contact surface and a second construction element having a second construction element contact surface. The plate is mounted between the first and second element. The plate has a first plate contact surface facing the first construction element contact surface and a second plate contact surface opposing said first plate contact surface and facing the second construction element contact surface. The plate contact surfaces have grooves opening to the respective plate contact surface and extending from an edge portion of the respective plate contact surface up to a further edge portion of said respective plate contact surface. Further, the first and second construction element contact surface both have a substantially vertical component relative to said horizontal plane, and the grooves comprise intersecting grooves.

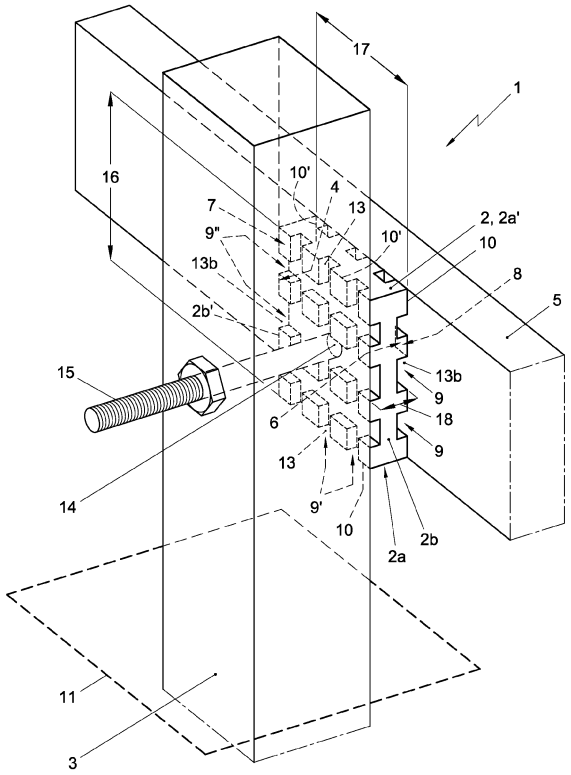

Fig. 1

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Description

[0001] The invention relates to an assembly of a construction and a decay prevention plate, said construction comprising a first construction element having a first construction element contact surface and a second construction element having a second construction element contact surface, said decay prevention plate being mounted between the first and second construction element, said decay prevention plate having a first plate contact surface facing the first construction element contact surface and a second plate contact surface opposing said first plate contact surface and facing the second construction element contact surface, said plate contact surfaces having grooves opening to the respective plate contact surface, said grooves extending from an edge portion of the respective plate contact surface up to a further edge portion of said respective plate contact surface.

[0002] United States patent publication US 6 108 992 discloses such an assembly, among others. Here, the decay prevention plate is an elongated plate mounted between two portions of lumber overlying one another. The grooves in the upper plate contact surface are intended for draining moisture in a lateral direction, and the grooves in the bottom plate contact surface form air grooves directed in the longitudinal direction of the elongated plate.

[0003] Although such an assembly may counteract rotting of an at least partly biodegradable contact surface of a construction element of a construction, a number of disadvantages can be identified. For example, water such as rain water may stay in the grooves for a relatively long period, thereby keeping the humidity of the air in the grooves relatively high, which for instance may slow down the drainage of moisture, which due to migration is located between a plate contact surface and a construction element contact surface. Therefore, drying of the contact surfaces may take a relatively long time. Further, properly mounting of the decay prevention plate in a construction is relatively complex, thereby introducing a chance of making errors, especially if the mounting is performed by an inexperienced person.

[0004] It is an object of the invention to obtain an assembly according to the preamble wherein at least one of the disadvantages is reduced. In particular, the invention aims at obtaining an assembly according to the preamble wherein rotting of a construction is counteracted relatively well. Thereto, according to an aspect of the invention, the first construction element contact surface has a substantially vertical component relative to a horizontal plane, the second construction element contact surface has a substantially vertical component relative to said horizontal plane, and the grooves comprise intersecting grooves.

[0005] By providing intersecting grooves in the plate contact surfaces, of which each faces a respective construction element contact surface having a substantially vertical component, it is counteracted that all grooves in the respective plate contact surface are horizontally directed. Therefore, water drops can move out of the grooves relatively fast, thereby enabling that the humidity in the grooves can decrease. Consequently, moisture, which due to migration is located between a plate contact surface and a construction element contact surface, can relatively easily disappear from between said surfaces. Accordingly, the contact surfaces, including the construction element contact surfaces, can dry in relatively short time. As a consequence, rotting of a construction can be counteracted relatively well.

[0006] The invention is at least partly based on the insights that construction element contact surfaces to be connected to each other are often the weakest points of a construction, at which construction elements generally start to rot; that construction element contact surfaces to be connected to each other during assembly of a construction often have a substantially vertical component relative to a horizontal plane, in particular when the construction is chosen from a group consisting of a bridge, a viaduct, a lock gate, a sheet piling, a pier or a dolphin structure, such as a berth or a mooring dolphin; and that water can generally not easily leave from grooves extending in a substantially horizontal direction.

[0007] Moreover, when a plate with intersecting grooves extending in different directions is clamped between two construction element contact surfaces, openings formed by ends of the differently directed grooves can open to different side edges of said plate. Therefore, said plate with intersecting grooves can counteract that all of said openings are accidently closed off, e.g. by further construction elements. Furthermore, grooves that open to different side edges of the decay prevention plate can help to increase air circulation, for instance because wind may easier access a complex formed by said grooves. In an advantageous embodiment, the grooves may have a groove width and/or a groove depth of at least about 5 mm. Through extensive testing, it is found that such grooves can dry relatively fast and that such grooves can facilitate that the construction element contact surfaces dry relatively fast.

[0008] In a further advantageous embodiment, substantially all portions of a respective plate contact surface separated from each other by the intersecting grooves each have a surface area being substantially equal to the surface area of substantially each of the other plate contact surface portions of said respective plate contact surface. Therefore, it can be counteracted that a relatively large portion of a construction element contact surface is covered by a relatively large portion of a respective plate contact surface, and it may be counteracted that said relatively large construction element portion may form a relatively weak point which may stay damp relatively long with respect to other, smaller, covered portions of said construction element.

[0009] In yet a further advantageous embodiment, the ratio between the total surface area of all plate contact surface portions of a respective plate contact surface,

which are separated from each other by the intersecting grooves, and the total surface area of all grooves of said respective plate contact surface is in the range of 0.5 to 2, preferably in the range of 0.667 to 1.5, and more preferably in the range of 0.833 to 1.2. Therefore, a plate can be provided, which on one hand can provide for relatively much fluid discharge surface area and on the other hand can provide for relatively much plate-to-element contact surface area for transmitting forces from one construction element to the decay prevention plate and/or to another construction element.

[0010] The invention also relates to a decay prevention plate.

[0011] Further, the invention relates to a method of assembling an assembly of a construction and a decay prevention plate.

[0012] Other advantageous embodiments according to the invention are described in the appended claims.

[0013] By way of non-limiting example only, embodiments of the present invention will now be described with reference to the accompanying figures in which:

Figure 1 shows a schematic perspective, partly cutaway view of an assembly of a construction and a decay prevention plate according to the invention; and

Figure 2 shows a schematic perspective view of a second embodiment of a decay prevention plate according to the invention.

[0014] The embodiments disclosed herein are shown as examples only and should by no means be understood as limiting the scope of the claimed invention in any way. In this description the same or similar elements have the same or similar reference signs.

[0015] In this description words like substantially or about should be understood as meaning that a slight variation on or deviation from an orientation or dimension or other assembly, product or method related feature is possible within the scope, at least such as would be understood by the skilled person. Such variation or deviation can for example be between 0% and 20%, more specifically between 0% and 15%, such as for example between 0% and 10% of the originally disclosed value or orientation or the like. For example, this should be understood as meaning that for a direction an angular variation would be allowable, such as when directions are defined as being substantially vertical, at least deviations thereof of less than 18°, 14° or 9° would be within the scope, whereas for parallel directions, including an angle of 180°, at least similar variations would be within the scope.

[0016] Figure 1 shows a schematic perspective, partly cutaway view of an assembly of a construction 1 and a decay prevention plate 2 according to the invention. The construction 1 comprises a first construction element 3 having a first construction element contact surface 4 and a second construction element 5 having a second construction element contact surface 6. The decay prevention plate 2 is mounted between the first and second construction element 3, 5. The decay prevention plate has a first plate contact surface 7 facing the first construction element contact surface 4 and a second plate contact surface 8 opposing said first plate contact surface 7 and facing the second construction element contact surface 6. The plate contact surfaces 7, 8 have grooves 9 opening to the respective plate contact surface 7, 8. It is noted that in this context opening does not exclude that the opening can be covered. For example, when the plate 2 is mounted, the grooves 9 opening to the respective plate contact surface 7, 8 generally are covered by the respective construction element contact surface 4, 6.

[0017] Further, a number of vertical grooves 9' extend from an edge portion 10 of the respective plate contact surface 7 up to a further edge portion 10' of said respective plate contact surface 7. Therefore, a groove 9' of a mounted decay prevention plate 2 can open to a respective plate edge portion 2a, 2a' of the decay prevention plate 2, providing an exit 13 for drainage of moisture and an entrance 13 for air, even when the respective plate contact surface itself is substantially completely covered. In addition it can be seen in Fig. 1 that the respective plate contact surface 7 of the decay prevention plate 2 comprises a number of horizontal grooves 9", which thus intersect the vertical grooves 9'. The intersecting horizontal grooves extend from an edge portion 2b to a further edge portion 2b' of said respective plate contact surface 7 and are opening to respective plate edge portions 2b, 2b' of the decay prevention plate 2, thereby providing further openings 13b forming exits for drainage of moisture and entrances for air. Furthermore, the first construction element contact surface 4 has a substantially vertical component relative to a horizontal plane 11, and the second construction element contact surface 6 has a substantially vertical component relative to said horizontal plane 11. This is, the construction element contact surfaces 4, 6 are not horizontally located.

[0018] In general terms the present invention can be understood as directed to a decay prevention plate 2 having intersecting dewatering grooves 9 for drying not horizontally located construction element contact surfaces.

[0019] Advantageously, the first and/or the second construction element contact surface can be substantially vertically located. This is, the respective construction element contact surface can be substantially transverse to the local horizontal plane, which is substantially perpendicular to the gradient of the local gravity field.

[0020] Further, the construction 1 may for instance be chosen from a group consisting of a bridge, a viaduct, a lock gate, a sheet piling, a pier or a dolphin structure, such as a berth or a mooring dolphin. Alternatively, the construction 1 may be another structure, e.g. an offshore platform.

[0021] The invention is in particular useful when the first construction element 3 and/or the second construction element 5 are made out of and/or comprise an at

least partly biodegradable material, e.g. wood or a wood composite.

[0022] The decay prevention plate 2 can be made out of wood or a wood-plastic composite (WPC), preferably a WPC being highly resistant to rot. For example, the mass ratio between plastic and wood of the WPC is in the range of 30% / 70% to 70% / 30%. More preferably, the WPC is a so called wood fibre composite (WFC). For example, the mass ratio between wood fibre and plastic of the WFC is in the range of 90% / 10% to 50% / 50%, preferably about 70% / 30%. Alternatively, the decay prevention plate 2 may be formed out of a plastic material, preferably a non-biodegradable plastic. Advantageously, the plate 2 may comprise a glass-reinforced or carbon fibre reinforced plastic.

[0023] In a preferred embodiment, the material of the plate 2 is chosen such that the plate 2 can sufficiently transmit forces from one construction element 3 to the plate 2 and/or to another construction element 5, for instance, when said plate 2 is clamped between said construction elements 3, 5.

[0024] Figure 2 shows a schematic perspective view of a second embodiment of a decay prevention plate 2 according to the invention. Here, the plate is substantially disc shaped. However, the plate can have another form, e. g. being substantially square, substantially triangular or oblong, for instance being substantially elliptically shaped.

[0025] Although the opposing plate contact surfaces 7, 8 are in this embodiment both substantially flat and substantially parallel with respect to each other, one or both of said plate contact surfaces 7, 8 may be concave and/or concave to some extent and/or may be tilted to some extent with respect to the other plate contact surface. This may be advantageous when the plate 2 is mounted between two construction element contact surfaces 4, 6 which are not flat and/or are tilted to some extent with respect to each other.

[0026] In the shown embodiment, the intersecting grooves 9a, 9b of each plate contact surface 7, 8 comprises two sets of grooves 9A, 9B, wherein within each set 9A, 9B the grooves 9 are substantially directed in the same direction, i.e. are substantially parallel. Here, each plate contact surface 7, 8 comprises two sets of grooves, and the directions of both sets of grooves are substantially transverse to each other. However, in other embodiments a plate contact surface can comprise more sets of intersecting grooves and/or the angles between the directions of different sets of intersecting grooves may for instance be in the range of 5° to 85°, e.g. about 45°, about 60° or about 75°.

[0027] Here, the grooves 9 of each set 9A, 9B of each plate contact surface 7, 8 are substantially straight and run at substantially right angles to the grooves of the respective other set of the respective plate contact surface, thereby forming a substantially right-angled grid in said respective plate contact surface.

[0028] The intersecting grooves 9 separate a respective plate contact surface 7, 8 in intermediate portions 12. Here, the groove pattern is a regular groove pattern, including two similar sets of grooves of similar cross-section, width and depth. Further, here, the grooves are offset at a regular interval. Alternatively, the grooves within one set can deviate from each other and/or the sets can be dissimilar from each other.

[0029] A regular groove grid pattern can cause that substantially all of the intermediate portions of a plate contact surface have a similar shape. For example, due to the right-angled grid of the shown embodiment substantially all of said intermediate portions are rectangular, preferably square.

[0030] Multiple portions 90, 91, 92, 93 of side walls of different grooves together define a stand-up side wall of an intermediate portion 12. Here, four portions of four grooves form four stand-up side wall segments 90, 91, 92, 93 of a stand-up side wall of a single square intermediate portion 12. The grooves do not need to have a rectangular cross section. Therefore, the side walls of the grooves, and thus the side wall segments of the intermediate portions 12, neither have to be transverse to the respective plate contact surface, nor have to be straight. For example, the side wall and/or side wall segments of an intermediate portion can be bent near the intermediate portions plate contact surface 120 of said portion and/or near the bottom 95 of the groove 9, e.g. such that said stand-up side wall flows over in said bottom 95 and/or in said plate contact surface 120.

[0031] Here, the intermediate portion surfaces 120 are substantially square. However, in an advantageous embodiment, the portions 12 of a respective plate contact surface separated from each other by the intersecting grooves 9 can have other shapes. For example, said portions 12 can substantially be formed triangular or polygonal.

[0032] Further, in the shown embodiment, respective adjoining side wall segments 92, 93 intersect each other at a corner 96 of the stand-up side wall. However, in a preferred embodiment, side wall segments of an intermediate portion 12 flow substantially smoothly into each other, viz. without forming edges 96 between said segments. This is, said portions 12 are preferably formed devoid of angles, and more preferably said portions are formed substantially circular or substantially elliptical.

[0033] Further, it is noted that some portions 12' of the plate contact surface, generally portions 12' located near an edge portion 10 of said plate contact surface, can be cut off and may therefore have a deviating shape with respect to the dominating intermediate portion shape. For example, here, substantially all intermediate portions 12 are formed as squares, but some of the intermediate portions 12' are substantially triangular shaped.

[0034] Preferably, substantially each of the portions of a respective plate contact surface separated from each other by the intersecting grooves has a surface area being substantially equal to the surface area of substantially each of the other plate contact surface portions of said

respective plate contact surface. However, some of the plate contact surface portions, e.g. plate contact surface portions 12' located near the edge portion 10 of the respective plate contact surface, may have deviating surface areas, preferably smaller surface areas, so that portions of the respective construction element contact surface covered by said plate contact surface portions 12' can therefore dry faster than or at least as fast as portions of said construction element contact surface which are covered by the other intermediate portions 12.

[0035] Here, each groove has, seen in the longitudinal direction of the respective groove, a substantially rectangular shaped cross section. However, the cross section may alternatively be U-shaped or V-shaped or may have yet another shape and said cross section does not need to be consistent over the length of the groove. Further, it is noted that not all grooves of a plate contact surface need to be shaped similarly.

[0036] Preferably, substantially all grooves of a respective plate contact surface have a width being substantially equal to each other. In a preferred embodiment the grooves have a groove width and/or a groove depth of at least about 5 mm. Preferably, the depth of a groove is substantially equal to the width of said groove. However, the width may differ from the depth of a groove, e.g. a groove may have a width being smaller or larger than its depth. By way of example, the groove width and/or groove depth can be about 5, 5.5, 6, 7, 8, 10, 12, 15, 20, 25, 30, 35, 40 or 50 mm. In choosing the width, depth and/or surface area of a cross section of a groove the size of the decay prevention plate and/or the length of the respective groove can be taken in account, among others. It is noted that the dimensions of the plate 2 may differ according to the construction in which said plate is used. For instance, in a small berth mooring relatively small decay prevention plates may be used in comparison to plates which may be used in a relatively big bridge. The decay prevention plate 2 can e.g. have a height 16 and/or a width17 of about 25-50 cm, e.g. 25, 30, 40 or 50 cm. However, the plate may be smaller or larger, e.g. its width and/or height can be about 8, 10, 15, 20, 60, 75 or 100 cm. Further, the thickness 18 of the decay prevention plate 2 can e.g. be about 15, 20, 25, 30, 40, 50, 80 or 100 mm. However, the plate can alternatively have another thickness.

[0037] In an advantageous embodiment, the ratio between the total surface area of all plate contact surface portions 12, 12' of a respective plate contact surface, which are separated from each other by the intersecting grooves 9, and the total surface area of all grooves 9 of said respective plate contact surface is in the range of 0.5 to 2, preferably in the range of 0.667 to 1.5, and more preferably in the range of 0.833 to 1.2. Preferably, said ratio can be about 1, i.e. the surface area of all grooves 9 of all grooves can be substantially equal to the total surface area of all plate contact surface portions 12, 12'. Preferably, the size of the decay prevention plate 2 and/or the total surface area of all plate contact surface portions are chosen such that said portions can sufficiently transmit forces from one construction element to the plate and/or to another construction element. By choosing said ratio between the total surface area of all plate contact surface portions 12, 12' and the total surface area of all grooves 9 such that the plate contact surface portions 12, 12' form a substantial part of the total of both of said total surface area's, it may be counteracted that the contact portions will be pressed into a construction element contact surface, e.g. when the latter surface comprises soft wood such as coniferous wood. Further, all or most of the plate contact surface portions 12, 12' can have a certain minimal surface area, e.g. 0.2, 0.5, 1, 5, 10, 25 or 100 square cm. Additionally or alternatively, the total surface area of the plate can be chosen in respect with, for instance, the size of the construction, the material, e.g. the sort of wood, used in the respective construction element and/or the pressure used to attach the respective construction element contact surfaces to each other.

[0038] Moreover, the groove depth may, additionally or alternatively, be arranged to compensate for the distance over which the plate contact surface may be pressed into the construction element contact surface. For example, the grooves of the plate may be formed deeper, e.g. about 1, 2 or 5 mm, than is desired that said grooves are in an assembly state, wherein said plate is mounted between two construction elements.

[0039] Here, both plate contact surfaces 7, 8 are formed substantially similar with respect to each other. This is, here, both plate contact surfaces 7, 8 are substantially flat and comprise a similar pattern of similarly intersecting similar grooves. Further, as best can be seen in Fig. 1, the grooves 9 of one plate contact surface 7, 8 can be placed substantially straight behind the grooves 9 of the respective other plate contact surface, seen in a direction substantially transverse to said plate contact surfaces 7, 8. Therefore, seen in said direction, an intermediate portion 12 of the first plate contact surface 7 is located substantially straight behind a corresponding intermediate portion 12 of the second plate contact surface 8, thereby facilitating relatively good transmittance of forces through the decay prevention plate 2.

[0040] Although, in the shown embodiments, both plate contact surfaces 7, 8 are formed substantially similar with respect to each other, the plate contact surfaces 7, 8 may differ in other embodiments. For example, one plate contact surface may have a substantially right-angled grid, while the opposing plate contact surface has a honeycomb conjecture, i.e. a substantially regular hexagonal grid. As another example, the direction of grooves of both plate contact surface may differ with respect to each other. For example, two opposing plate contact surfaces can be parallel and can both comprise a right-angled groove grid, wherein both grids are translated and/or turned to some extent relatively to the other groove grid.

[0041] In the embodiment of Fig. 1 the decay prevention plate 2 further comprises one mounting aperture 14 extending from the first plate contact surface 7 to the

second plate contact surface 8. Alternatively, the plate may comprise zero or more than one, e.g. two (see Fig. 2), three or four, mounting apertures 14. It is noted that the decay prevention plate 2 can comprise plenty mounting apertures 14, e.g. ten, twenty, forty or even more. The number of apertures 14 may e.g. depend on the shape and/or size of the mounting plate. The aperture 14 may be arranged for receiving an attachment means 15, such as a bolt 15, for mounting the plate 2 between the contact surface 4 of the first construction element 3 and the contact surface 6 of the second construction element 5. For example, the attachment means 15 can be used to pull said elements 3, 5 relatively to each other, thereby clamping the plate in between.

[0042] Moreover, according to an aspect of the invention, there is provided a method of assembling an assembly of a construction and a decay prevention plate, comprising the step of mounting a decay prevention plate having two opposing plate contact surfaces provided with grooves opening to the respective plate contact surface and extending from an edge portion of the respective plate contact surface up to a further edge portion of said respective plate contact surface, wherein the decay prevention plate is mounted between a first construction element contact surface of a first construction element of a construction and a second construction element contact surface of a second construction element of the construction. Said grooves comprise intersecting grooves. Further, said first construction element contact surface has a substantially vertical component relative to a horizontal plane and said second construction element contact surface has a substantially vertical component relative to said horizontal plane. Furthermore, the decay prevention plate is mounted between the construction element contact surfaces in a substantially vertical position. It is noted that said construction may preferably be chosen from a group consisting of a bridge, a viaduct, a lock gate, a sheet piling, a pier or a dolphin structure, such as a berth or a mooring dolphin.

[0043] The invention is not restricted to the embodiments described above. It will be understood that many variants are possible.

[0044] For example, the intersecting grooves in Fig. 1 are substantially located in the horizontal and in the vertical direction, respectively. However, the grooves may be oriented in other directions and/or the plate may be mounted differently. For instance, two sets of intersecting grooves of a substantially vertically mounted plate contact surface may each be diagonally directed, such that the grooves of both sets are directed in a direction with a substantially vertical component and a substantially horizontal component. Since the grooves of the decay prevention plate comprise intersecting grooves, mounting the plate can be practically foolproof. This means that it will be almost impossible to misplace the plate when it is mounted between two construction element contact surfaces each having a substantially vertical component relative to said horizontal plane, because, due to the intersecting nature of the grooves of each plate contact surface, at least a part of the grooves of each of said surfaces will have a substantially vertical component relative to the horizontal plane.

[0045] Besides, it is noted that in alternative embodiments an alternative decay prevention plate may be provided, which only has grooves at one side. Such alternative plate can, for instance, be used to mount a wooden construction element to a construction element made of an undegradable material, such as a plastic. It will be apparent to the person skilled in the art that features shown and/or described in the context of a plate comprising two opposing grooved contact surfaces are understood as to be shown and/or described in combination with the single sided grooved plate as well.

[0046] Moreover, a decay prevention plate can comprise more than one first construction element contact surface and/or more than one second construction element surface. For example, when a plank is attached to many transverse planks, an oblong decay prevention plate, having many second construction element surfaces to contact said transverse planks, may be used. Alternatively, all or a number of the transverse planks may each be connected to one or more than one, shared second construction element surfaces of said plate.

[0047] These and other embodiments will be apparent to the person skilled in the art and are considered to lie within the scope of the invention as formulated by the following claims.

Claims

1. Assembly of a construction and a decay prevention plate, said construction comprising a first construction element having a first construction element contact surface and a second construction element having a second construction element contact surface, said decay prevention plate being mounted between the first and second construction element, said decay prevention plate having a first plate contact surface facing the first construction element contact surface and a second plate contact surface opposing said first plate contact surface and facing the second construction element contact surface, said plate contact surfaces having grooves opening to the respective plate contact surface, said grooves extending from an edge portion of the respective plate contact surface up to a further edge portion of said respective plate contact surface, **characterized in that** said first construction element contact surface has a substantially vertical component relative to a horizontal plane, **in that** said second construction element contact surface has a substantially vertical component relative to said horizontal plane, and **in that** said grooves comprise intersecting grooves.

2. Assembly according to claim 1, wherein the con-

struction is chosen from a group consisting of a bridge, a viaduct, a lock gate, a sheet piling, a pier or a dolphin structure, such as a berth or a mooring dolphin.

3. Assembly according to claim 1 or 2, wherein the intersecting grooves of each plate contact surface comprises two sets of grooves, wherein within each set the grooves are substantially directed in the same direction.

4. Assembly according to claim 3, wherein the grooves of each set of each plate contact surface are substantially straight and running at substantially right angles to the grooves of the respective other set of the respective plate contact surface, thereby forming a substantially right-angled grid in said respective plate contact surface.

5. Assembly according to any of the preceding claims, wherein substantially each of the grooves of a respective plate contact surface have a width being substantially equal to each other.

6. Assembly according to any of the preceding claims, wherein substantially all portions of a respective plate contact surface separated from each other by the intersecting grooves each have a surface area being substantially equal to the surface area of substantially each of the other plate contact surface portions of said respective plate contact surface.

7. Assembly according to any of the preceding claims, wherein the ratio between the total surface area of all plate contact surface portions of a respective plate contact surface, which are separated from each other by the intersecting grooves, and the total surface area of all grooves of said respective plate contact surface is in the range of 0.5 to 2, preferably in the range of 0.667 to 1.5, and more preferably in the range of 0.833 to 1.2.

8. Assembly according to any of the preceding claims, wherein the grooves have a groove width and/or a groove depth of at least about 5 mm.

9. Assembly according to any of the preceding claims, wherein the decay prevention plate further comprises at least one mounting aperture extending from the first plate contact surface to the second plate contact surface.

10. Decay prevention plate for use in an assembly according to any of the preceding claims, having a first plate contact surface and a second plate contact surface opposing said first plate contact surface, said plate contact surfaces having grooves opening to the respective plate contact surface, said grooves extending from an edge portion of the respective plate contact surface up to a further edge portion of said respective plate contact surface, **characterized in that** said grooves comprise intersecting grooves.

11. Decay prevention plate according to claim 10, wherein the intersecting grooves of each plate contact surface comprises two sets of grooves, wherein within each set the grooves are substantially directed in the same direction, preferably wherein the grooves of each set of each plate contact surface are substantially straight and running at substantially right angles to the grooves of the respective other set of the respective plate contact surface, thereby forming a substantially right-angled grid in said respective plate contact surface.

12. Decay prevention plate according to claim 10 or 11, wherein substantially all grooves of a respective plate contact surface have a width being substantially equal to each other and/or wherein the grooves have a groove width of at least about 5 mm and/or wherein the grooves have a groove depth of at least about 5 mm and/or wherein the decay prevention plate further comprises at least one mounting aperture extending from the first plate contact surface to the second plate contact surface.

13. Decay prevention plate according to claim 10, 11 or 12, wherein substantially each of the portions of a respective plate contact surface separated from each other by the intersecting grooves has a surface area being substantially equal to the surface area of substantially each of the other plate contact surface portions of said respective plate contact surface and/or wherein the ratio between the total surface area of all plate contact surface portions of a respective plate contact surface, which are separated from each other by the intersecting grooves, and the total surface area of all grooves of said respective plate contact surface is in the range of 0.5 to 2, preferably in the range of 0.667 to 1.5, and more preferably in the range of 0.833 to 1.2.

14. Method of assembling an assembly of a construction and a decay prevention plate, comprising the step of mounting a decay prevention plate having two opposing plate contact surfaces provided with grooves opening to the respective plate contact surface and extending from an edge portion of the respective plate contact surface up to a further edge portion of said respective plate contact surface, wherein the decay prevention plate is mounted between a first construction element contact surface of a first construction element of a construction and a second construction element contact surface of a second construction element of the construction, **characterized in that** said grooves comprise intersecting

grooves, **in that** said first construction element contact surface has a substantially vertical component relative to a horizontal plane, **in that** said second construction element contact surface has a substantially vertical component relative to said horizontal plane, and **in that** the decay prevention plate is mounted between the construction element contact surfaces in a substantially vertical position.

15. Method according to claim 14, wherein the construction is chosen from a group consisting of a bridge, a viaduct, a lock gate, a sheet piling, a pier or a dolphin structure, such as a berth or a mooring dolphin and/or wherein the decay prevention plate is a decay prevention plate according to any one of claims 10-13.

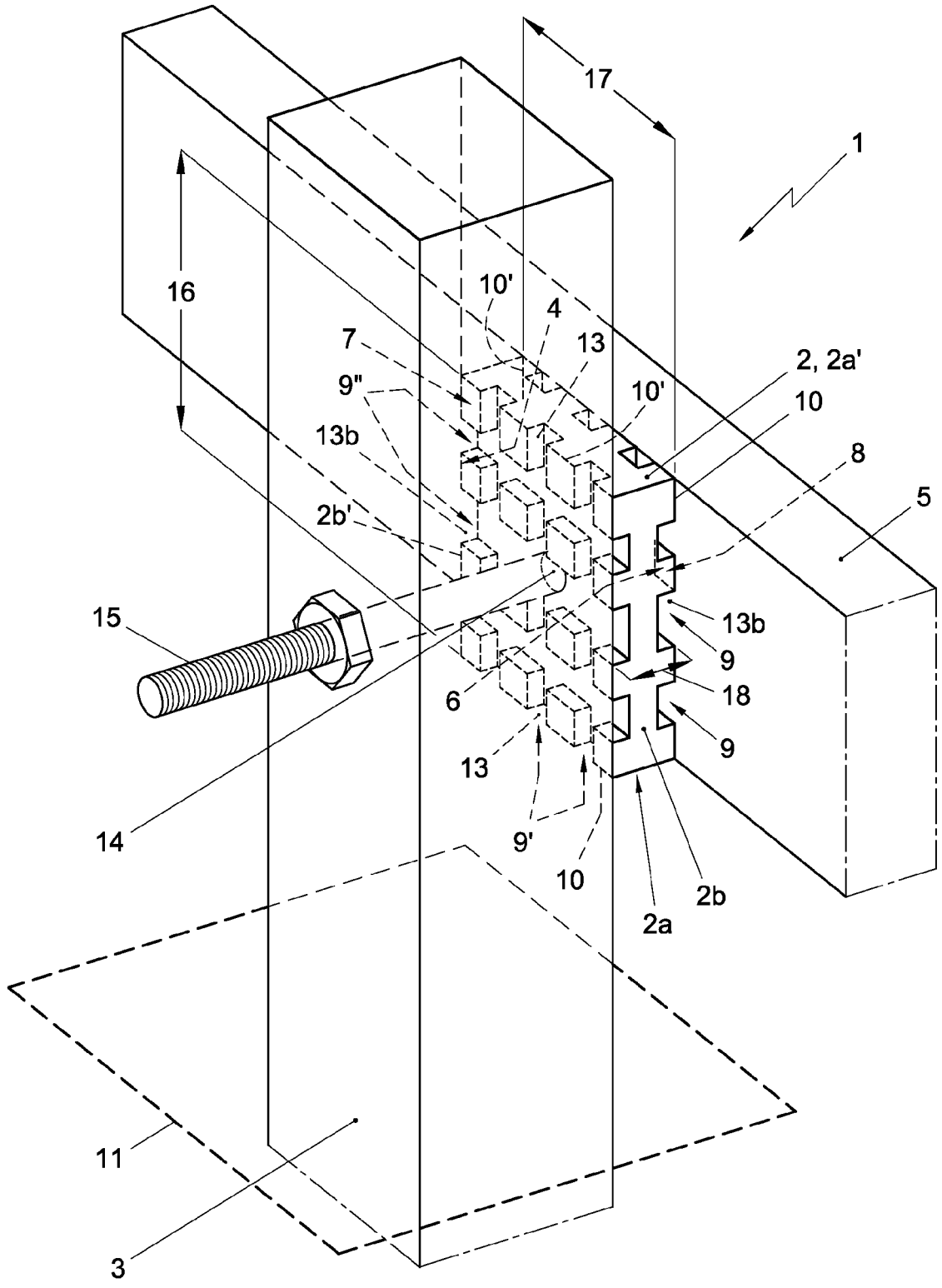
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Fig. 1

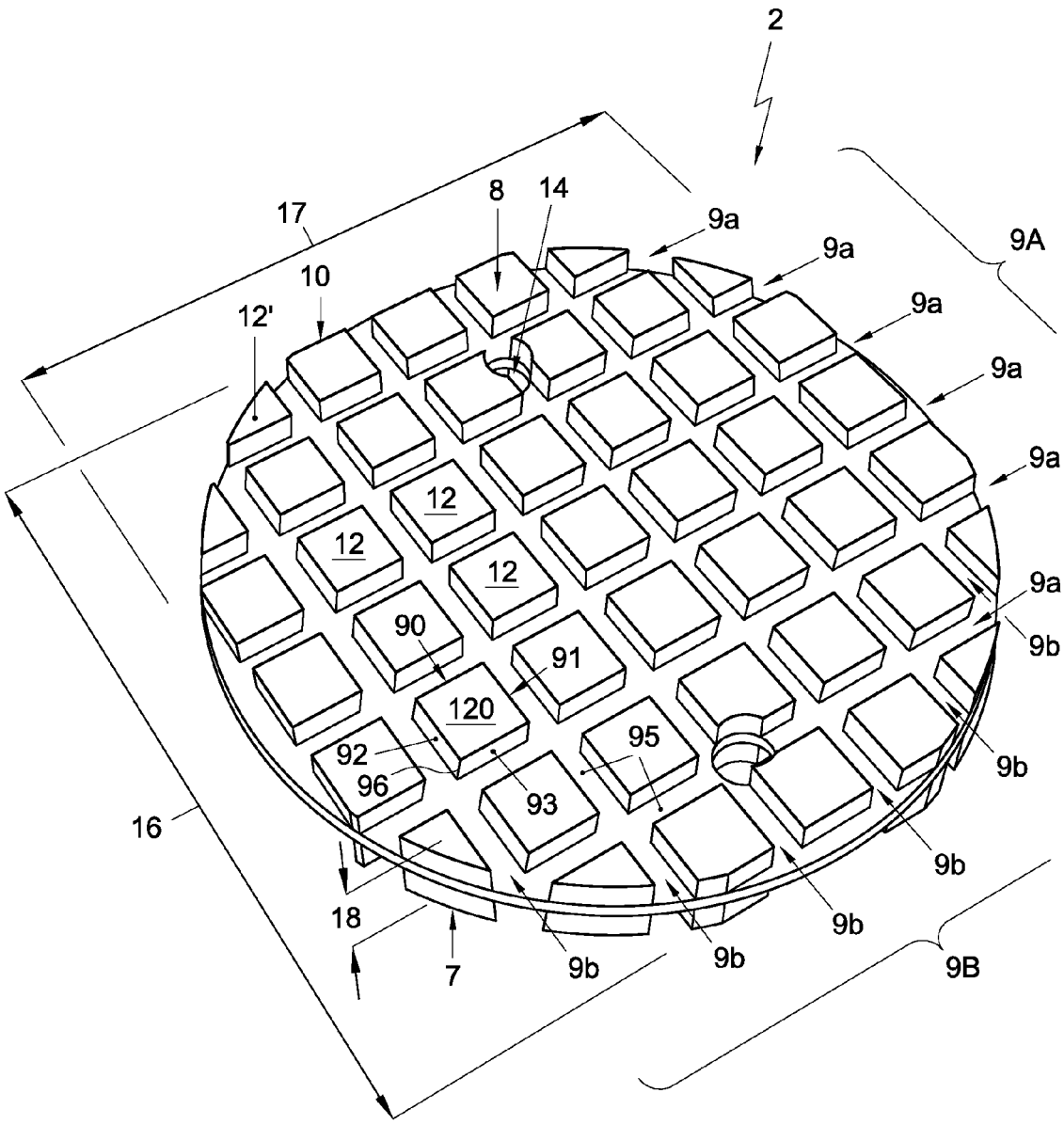

Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 11 19 4342

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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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A	* figures 1-4 *	2,15	E01F15/04
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	30 May 2012	Schnedler, Marlon

CATEGORY OF CITED DOCUMENTS

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