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(54) **Frame for a fence**

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Description

DOMAIN OF THE INVENTION

[0001] The present invention relates to a frame for a fence. The invention also relates to a door and a fence comprising such a frame, and to a method for assembling such a fence.

PRIOR ART

[0002] Fences are well known and are typically found along the perimeter of a garden, to hide the garden from the view of passers-by and to keep animals outside the garden. A fence can however also be placed inside a garden, for example along a swimming pool. Fences are also used for surrounding an industrial estate.

[0003] DE202006011879U1 describes a fence with a lattice of horizontal and vertical bars, and U-shaped panels hung alternately on either side of the fence on the horizontal bars. The problem of thermal expansion is approached in the way the panels are hung, in particular by the panels having an opening with a slot for receiving the horizontal bars. This fence, however has the disadvantage that the panels can easily be removed by passers-by by lifting them from the horizontal bar, and that the panels are of a complex shape.

[0004] NL1029396 describes a fence with two parallel rails with grooves wherein edges of a screen which can be received, and with a shield at the top of the screen. The screen can for example be a mesh of metal wires and attached thereto a braid of reeds. By the shield on top this fence offers protection from precipitation, but it offers no lateral protection to the screen.

[0005] DE 102007 015861 describes a frame for a fence, said frame comprising all of the features of the preamble of claim 1.

DISCLOSURE OF THE INVENTION

[0006] It is an object of the invention to provide a frame for a fence, whereby the frame comprises at least one panel, and whereby the frame offers optimal protection to the panel, in particular a mechanical protection that allows thermal expansion and contraction of the panel.

[0007] Thereto the frame of the present invention comprises a first wall and a second wall placed opposite the first wall at a predetermined distance from the first wall and connected thereto, and wherein each wall comprises a lattice of lying and upright bars which are connected together, and wherein the frame comprises at least two opposing profiles, located between the first and the second wall, the frame further comprising at least one panel located between the opposing walls, the opposing profiles receiving opposing edges of said at least one panel .

[0008] The inventor has found that a solid frame for a fence is provided when two lattices are placed at a distance from each other and are interconnected. By this a hollow three-dimensional structure is provided of a relatively low weight. Because each wall is a lattice of upright and lying bars, a structure is obtained which is very strong, and whereby forces exerted on the lattice are divided over the multitude of bars running in different directions over each other. The use of a hollow three-dimensional structure allows panels to be mounted between the two walls, for example to prevent looking through or to provide a closed fence. According to the invention the panels are thereby received by two opposing profiles located between the two walls. The two opposing profiles thereby function on the one hand as a spacer between the two walls, and on the other hand as holder of the panels.

[0009] As the strength of the frame is provided mainly by the two lattices located on both sides of the panels, the panels can be made thinner, so that material can be saved which is beneficial for weight and cost. Because the panels along each side are visible through the meshes of the lattice, a positive aesthetic effect can be achieved by choosing panels of a certain form or color.

[0010] In a preferred embodiment of the frame according to the present invention the at least two opposing profiles are substantially U-shaped profiles, whose openings are turned towards each other, so that the panel can be held between the opposing profiles.

[0011] By mounting the panels in U-shaped profiles, problems of thermal expansion or contraction are taken care of. The use of U-shaped profiles allows to provide the panels with more or less play, and thus to take care of thermal expansion or contraction and to prevent cracks. When a frame contains more than one panel, in this way also gaps between the panels are masked by the U-shaped profile, which prevents looking through the frame.

[0012] In a preferred embodiment of the frame according to the present invention, the first wall comprises a first spacer, and the second wall comprises a second spacer, whereby the distance between the first and second spacer is sufficient for receiving a panel between the first and second spacer with some play.

[0013] It is generally known that large panels exposed to weather conditions such as moisture and temperature can deform over time, especially when the panels are thin and are subject to forces. The inventor has however found that the risk of deforming or bending of the panels used in the frame of the present invention is minimal in the presence of these spacers.

[0014] The first spacer is preferably a bar that is part of the lattice of the first wall and the second spacer a bar that is part of the lattice of the second wall, the first and second spacers being located at a position between two U-profiles turned towards each other.

[0015] The inventor has found that bars that are already part of the lattice can be used as spacers, thus saving cost and weight and simplifying the assembly.

[0016] The invention also relates to a fence comprising a plurality of upright columns placed at a predetermined

distance from one another in longitudinal direction of the fence, and at least one frame as described above, placed between two consecutive columns, whereby a first column is adapted for receiving a first upright edge of the frame and a second column is adapted for receiving a second upright edge of the frame, the first and second upright edges of the frame being opposite each other. Preferably these columns comprise substantially U-shaped profiles with openings of consecutive columns facing each other, so that the frame can be held between the opposing profiles.

[0017] The inventor has found that by applying the principle of U-shaped profiles also for the attachment of a frame between consecutive columns of a fence, the problems of thermal expansion or contraction can also be taken care of in the longitudinal direction of the fence, as well as masking of vertical cracks.

BRIEF DESCRIPTION OF THE FIGURES

[0018] The invention will be further clarified by the following description and the accompanying figures of a preferred embodiment of a frame, a door, and a fence according to the invention. The figures are not drawn to scale and are used only to describe the principle.

Figure 1A shows a preferred embodiment of a fence according to the present invention.
Figure 1B shows a detailed view of several meshes of the lattice of Fig 1A.
Figure 2A shows a cross section of the frame of Fig 1A according to line II-II.
Figure 2B shows an H-shaped profile in cross section.
Figure 2C shows a portion of the frame of Fig 2A in perspective view.
Figure 3A shows a cross section of the frame of Fig 3B according to line III-III.
Figure 3B shows a portion of an alternative embodiment of a frame according to the invention.
Figure 4A shows a detailed view of a column with upright profiles, whereto one frame according to the invention is mounted.
Figure 4B shows a detailed view of a column with upright profiles, whereto two frames according to the invention are attached.
Figure 5 is a schematic representation of a method for assembling a fence with a frame according to the present invention.
Figure 6 shows a door according to the present invention in front view.
Figure 7 shows a cross section of the door of Figure 6 according to line VII-VII.
Figure 8 shows a cross section of the door of Figure 6 according to line VIII-VIII.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

REFERENCES:

[0019]

1	frame
2	lying bar
3	upright bar
4.	lying U-profile
5	lying H-profile
6	upright U-profile
7	meshes
8	screw
9	column
10	fence
11	door
12	first spacer
13	panel
14	flat profile
15	lock
16	upright U-profile
17	lying U-profile
18	upright tubular profile
19	first wall
20	second wall
22	second spacer
23	corner
H	distance between two lying bars
B	distance between two upright bars

[0020] Fences 10 are well known and are typically found along the perimeter of a garden, to hide the garden from view of passers-by and to keep animals outside the garden. A fence 10 can however also be placed inside a garden, for example, along or around a swimming pool. Fences 10 are also used for surrounding an industrial estate.

[0021] The present invention provides a frame 1 for a fence 10 characterized in that the frame 1 comprises a first wall 19 and a second wall 20 placed opposite the first wall at a predetermined distance from the first wall 19 and connected thereto, each wall comprising a lattice of lying and upright bars 2, 3 connected to each other, and in that the frame 1 comprises at least two profiles 4, 16 opposite each other and located between the two walls 19, 20 whereby the opposite profiles 4, 16 are adapted for receiving opposite edges of at least one panel 13 located between the opposite walls 19, 20. Hereby the opposite profiles 4, 16 can be lying profiles or upright profiles or a combination of both.

[0022] The frame 1 shown in Fig 2A and Fig 2C comprises a first wall 19 and a second wall 20, each comprising a plurality of lying bars 2 and upright bars 3 which are connected to each other. Preferably the lying and upright bars 2, 3 are connected to form a lattice. With bar in relation of this invention is meant an object with dimen-

sions in the longitudinal direction that are much larger, for example at least ten times larger than the dimensions in cross section. In the frame 1 shown in the figures the bars run substantially horizontally and vertically, but other orientations considered suitable by the person skilled in the art are also possible. The upright bars 3 can for example have an angle of 80° with regards to the lying bars 2, which is for example usual when the garden lies on a slight slope. It is also possible that the lying bars 2 are not lying horizontally, but are mounted under an angle to horizontal. Furthermore, it is not necessary for the invention that the lying and upright bars 2, 3 are at right angles to each other.

[0023] Between the first and second wall 19, 20, of the frame 1 (see Figure 2A) a plurality of lying profiles 4 are installed, and attached to the first and second wall 19, 20. The profiles 4 are adapted for receiving and holding edges of a panel 13. The frame 1 shown in Fig 2A comprises three pairs of lying profiles 4 for holding three panels 13, the frame 1 shown in Figure 3A comprises two pairs of lying profiles 4 for holding two panels 13. In Figures 6-8 a door 11 is shown comprising a frame 1 according to the invention, whereby one panel 13 is mounted between two upright profiles 16. The opposing profiles 4, 16 are thus typically encountered in pairs, but the panel 13 of the door 11 can also be held by three profiles that work together for receiving and holding a panel 13. The number of panels 13 in a frame 1 is not limited from one to three, but other numbers are also possible, for example four or six. In an alternative embodiment of the frame according to the invention also two or more panels can be slid between two opposing profiles.

[0024] Depending on the material used for the frame 1, the connection between the bars 2, 3 of the lattice mutually, and the connection of the opposing profiles 4, 16 with the two walls 19, 20 can for example be made by welding or gluing, but any other connection technique found suitable by the person skilled in the art can also be used.

[0025] In a preferred embodiment of the frame 1 according to the invention two or more profiles 4, 16 work together for receiving and holding a panel of 13. Preferably use is made of mainly U-shaped profiles, whose openings are turned towards each other, so that the panel 13 can be held between the opposing profiles 4, 16.

[0026] A preferred embodiment of such a U- profiles 4 is shown in Figure 2A and 2C. The dimensions of the profiles are chosen such that some play is provided between the profile 4 and the panel 13 and there is enough room for allowing some thermal expansion or contraction of the panel 13. The inventor has found that a temperature difference of at least 75 °C should be taken into account between winter and summer, whereby a panel 13 of 60 cm height can for example expand 8 mm. Since the panels 13 of Fig 2A rest on their bottom edge, this play should be provided at the U-profile 4 turned downward. The inventor has found that a U-shaped profile 4 with a height of 15 mm provides good protection, but other dimensions found suitable by the person skilled in the art are also possible, taking into account the dimensions of the panel 13. For reasons of symmetry and aesthetics the same dimensions are preferably also used for the opposite placed U-shaped profile 4, 16. The U-profile 4 can have sloping sides, such as shown in Fig 2A, or right sides, as shown in Fig 3A. In the figures, the U-profiles 4 are drawn with sharp corners, but rounded corners are also possible. In an alternative embodiment of the frame 1 according to the invention, instead of U-shaped profiles 4 also H-shaped profiles 5 can be used, as shown in Fig 2B, except for the outer two profiles 4.

[0027] In a preferred embodiment of the frame 1 according to the invention, the first wall 19 comprises one or more first spacers 12, and the second wall 20 comprises one or more second spacers 22. Thereby the distance between the first and second spacers 12, 22 is selected such that it is sufficient for receiving a panel 13 between the first and second spacers 12, 22 with some play.

[0028] Figures 2C and 3B show that the panels 13 in a frame 1 according to the invention are not only held by two U-shaped profiles 4, but they are also held in position in a direction perpendicular to the plane of the panel 13 between spacers 12, 22, located on either side of the panel 13. The spacers 12, 22 counteract deformation in transverse direction of the panels 13, and assist in this way that panels 13 remain as flat as possible, even if they are subject to external weather conditions such as humidity and temperature. The shape of the spacers 12, 22 is not essential to the invention. The spacers can for example by round bars, as shown in Fig 2C, or can have a square or rectangular cross section, as shown in Fig 3B, but any other shape found suitable by the person skilled in the art is also possible. To optimally resist zigzag formation of the panel it is important that both spacers 12, 22 be as much as possible placed in opposite positions. It is important that the spacers 12, 22 be placed at a distance from each other sufficiently large for receiving a panel 13, and sufficiently small to counteract deformation of the panel 13. The orientation of the spacers 12, 22 is preferably the same as the direction of the insertion of the panels 13 for limiting as much as possible scratches on the panels 13 caused by the insertion and for hiding possible scratches behind the spacers 12, 22. The spacers 12, 22 in Fig 3B are lying, since the panels 13 of the preferred embodiment of the frame 1 are inserted substantially horizontally, as shown in Figure 5, and the spacers of the door 11 in Fig 8 are upright, because the panel 13 of the door 11 is inserted from above.

[0029] The spacers 12, 22 can be part of the frame 1 or may be mounted thereto. Preferably however, the first spacer 12 is a bar that is part of the lattice of the first wall 19 and the second spacers 22 is a bar that is part of the lattice of the second wall 20, the first and second spacers 12, 22 being located at a position between two U profiles 4, 16 facing each other.

[0030] As shown in Fig 2A and 2C in the preferred em-

bodiment of the frame 1 according to the invention, all bars located between the two U-profiles 4 facing each other are used as spacers 12, 22, as this simplifies the assembly of the fence 10 and provides an additional reinforcement. In this way the panel 13 can be optimally held in position. By using bars of the lattice itself, it can be avoided that extra holders need to be mounted to the frame 1, thereby saving materials and labor, and maintaining the aesthetic effect of the frame 1. This is also illustrated by the frames 1 of Figures 3B, 7, 8.

[0031] In a preferred embodiment of the frame 1 according to the invention, the frame 1 is made of metal, preferably steel, more preferably galvanized and powder coated steel.

[0032] By manufacturing the frame 1 according to the invention from steel, preferably drawn steel, a frame of a solid and robust structure is provided, which is highly resistant to external forces. By galvanizing the steel, the frame 1 is corrosion resistant. Furthermore, a hard and scratch-resistant coat which is highly resistant to weathering and other external influences, is applied by the powder coating. Furthermore, the powder coating can be chosen from a wide range of colors, thereby obtaining an aesthetic frame, especially when the color of the frame and the color of the panels are aligned to each other. In an alternative embodiment, the frame 1 can be made from galvanized steel, preferably hot dip galvanized steel, or the frame 1 can be made from aluminum. In the case of aluminum preferably an anodisation layer is applied that creates a hard and scratch resistant layer, and that is available in different colors and thereby provides an aesthetic view.

[0033] In a preferred embodiment of the frame 1 according to the invention, the lying and upright bars 2, 3 have a substantially circular cross section with a diameter between 2 and 8 mm, preferably 5 mm.

[0034] Preferably, the bars 2, 3 have a circular cross section, as shown in Fig 2A and 2C. The inventor has found that round bars 2, 3 of drawn steel with a diameter of 5 mm are sufficiently strong and sufficiently resistant to deformation. In addition they are available at low cost. Since round bars show no sharp edges or corners, the risk of scratches on the panels 13 during assembly or by thermal expansion or contraction is minimized, and injury to persons or damage to a ball for instance, can be avoided. The round shape is not essential for the invention, and any other form found suitable by the person skilled in the art can also be used, for example a bar 2, 3 with a rectangular cross section, as shown in Fig 3A and 3B.

[0035] In a preferred embodiment of the frame 1 according to the invention, the distance between consecutive lying bars 2 of one wall, and the distance between consecutive upright bars 3 of one wall is a distance between 5 and 35 cm, preferably between 15 and 25 cm, whereby the distance between consecutive lying and upright bars 2, 3 may be the same or different.

[0036] Figure 1A and 1B show how the distances between the upright and the lying bars 3, 2 define a grid with meshes 7 having a width B and a height H. Although not essential to the invention, the value B does not have to be the same between all upright bars 3, and the value H does not have to be the same for all lying bars 2. The inventor has noted however that a strong and aesthetic frame 1 is obtained with an aperture 7 of almost 20 x 20 cm, but other dimensions such as 15 x 15 cm or 25 x 25 cm or 15 x 20 cm or 20 x 25 cm are also possible.

[0037] In a preferred embodiment of the frame 1 according to the invention, the frame 1 has a length in longitudinal direction between 70 cm and 2.50 m and a height between 1.0 m and 2.4 m.

[0038] Since the frame 1 can be used for different applications, the length and height can vary greatly. A typical height for a fence 10 on a terrace around table and chairs is 1.0 m, a typical height of a fence 10 around a garden where one can not look inside is 1.80 m, a typical height of a fence 10 around an industrial estate is 2.40 m, a typical size of a door 11 or a gate is 70 - 90 cm, and a typical width between columns 9 of a large fence is 1.80 m or 2.0 m or 2.20 m or 2.50 m.

[0039] In a preferred embodiment of the frame according to the invention, the frame 1 comprises at least one panel 13 made of a plastic material. Particularly suitable is a material selected from the group of polyethylene, polypropylene, PVC, polystyrene, ABS, polycarbonate, PMMA, or combinations of two or more thereof.

[0040] The inventor has found that panels 13 made of one or more of these materials are particularly suitable for use in a frame 1 that is subject to external weather conditions. This is important to ensure a long lifetime of the frame 1, in particular with regards to color retention, and the fact that such panels 13 do not become brittle in the sun. Polyethylene for example has such a high color retention, and the material remains soft in the sun so that the panel 13 will not break for example when a ball is kicked against the frame 1. Moreover, these plastic materials are available in different colors, so that a frame 1 and therefore also a separation or a fence with a nice aesthetic appearance is obtained. The invention will however also work with panels 13 made of other materials such as steel sheet. In an alternative embodiment of the invention transparent panels can be used, or a combination of transparent and nontransparent panels. The transparent panels can for example be manufactured from polycarbonate or PMMA. This is typically applied when the fence serves as a shield against wind or draught.

[0041] In a preferred embodiment of the frame 1 according to the invention the frame 1 comprises at least one panel 13 having a thickness between 1.0 and 20 mm, preferably between 1.5 and 10 mm, more preferably between 1.5 and 5 mm.

[0042] The inventor has found that panels 13 with a thickness of between 1 and 20 mm are very suitable for a frame 1 according to the present invention. This is possible because virtually no forces are exerted upon the panel 13 as the panel 13 can freely expand and contract as described above, and the panel 13 is held as flat as

possible by the spacers 12, 22 which don't or hardly exert forces on the panel 13. After all, the strength of the frame 1 is provided by the walls 19, 20, not by the panel 13. The inventor has surprisingly found that a panel 13 of polyethylene of only 3 mm thick has sufficient rigidity and stiffness. 13 Such panels 13 are very lightweight, thus easy to install, and also cheap. Panels 13 of any other thickness found suitable by the person skilled in the art, can however also be used.

[0043] In a preferred embodiment of the frame 1 according to the invention at least two panels 13 are received between the first and second walls 19, 20 in height direction of the frame 1, in such a way that a lower and an upper edge of each panel 13 is held between a lower and an upper lying profile 4, whereby the upper profile 4 of a lower panel 13 and the lower profile 4 of the panel 13 installed above it are mounted substantially adjacent. Preferably, the panels 13 thereby have a height between 50 and 120 cm, preferably 60 or 90 cm.

[0044] Fig 2A respectively 3A shows a frame 1 with three resp. two superimposed units, each comprising one panel 13. With unit is meant the combination of opposite profiles 4 and a panel 13 placed between them. With two or three panels 13 of 60 cm high, a frame 1 is provided of substantially 1.20 m respectively 1.80 m. These dimensions are however not essential to the invention, and any other size found suitable by the person skilled in the art can also be chosen. By holding each panel 13 between an upper and a lower profile 4, the expansions and compressions of the different panels do not cumulate. By mounting the U-shaped profiles 4 of superimposed units adjacent or against each other, the creation of an opening between the different units is prevented, through which passers-by can look inside.

[0045] The invention also relates to a door 11 for a fence whereby the door 11 comprises a frame 1, with features as described above, and whereby the opposing profiles 16 are upright profiles.

[0046] Figures 6-8 show a preferred embodiment of a door 11 with a frame 1 according to the invention, with lying and upright bars 2, 3, whereby in this case all upright bars 3 are also distance holders 12, 22. The door 11 includes a complete frame with two upright tubular profiles 18, two U-profiles 17 facing each other on top, and two U-profiles 17 turned to each other below. In an alternative embodiment instead of U-profiles 17 also tubular profiles can be used, for example, rectangular tubular profiles with rounded corners. The U-profiles 17 are located at a distance from each other larger than the thickness of the panel 13, which can be shifted in the door 11 from above through the opening between the U-profiles 17 on top, and between the walls 19, 20. The side edges of the panel 13 are thereby held by upright U-profiles 16 which are attached on the inside of the upright tubular profiles 18. In an alternative embodiment instead of these U-profiles 16 also flat profiles can be mounted transverse to the tubular profile 18. The gap between the U-profiles 17 below is closed by means of a flat profile 14, upon which the bottom edge of the panel 13 rests. In this way the panel 13 can expand or shrink in height direction, whereby the upper edge of the panel 13 is located between the two U-profiles 17 on top, for aesthetic reasons. Further the door typically also comprises a door lock 15 and an optional latch (not shown) as known in the art.

[0047] The invention also relates to a fence 10 comprising a plurality of upright columns 9 placed at a predetermined distance from each other in the longitudinal direction of the fence 10, and at least one frame 1 with characteristics as described above, placed between two consecutive columns 9, whereby a first column 9 is adapted for receiving a first upright edge of the frame 1 and a second column 9 is adapted for receiving a second upright edge of the frame 1, the first and second upright edges of the frame being located opposite each other.

[0048] Fig 1A shows a fence 10 according to the invention, whereby frames 1 with features as described above are placed and held between two upright columns 9. The fence 10 can be open, for example for separating a driveway between two houses, or can be closed, such a closed fence around a garden.

[0049] The columns 9 thereby preferably comprise substantially U-shaped profiles 6 which are preferably located between the columns 9, and whose openings of consecutive columns 9 are facing each other, so that the frame 1 can be held between the opposing profiles 6.

[0050] Figure 4B shows a column 9 with a square cross-profile whereto U-shaped profiles 6 are mounted for holding a frame 1 according to the invention. The shape of the column 9 is however not essential to the invention, and columns 9 with another cross section can also be used, for example, rectangular or round. But any other shape known to the skilled person can also be used. The U-profiles 6 are preferably bolted to the column 9, but every other attachment method known by the skilled person is also possible, for example by welding. When such a fence 10 is for example placed transverse against a wall, a corner column 9 can be placed against the wall, as shown in Fig 4A, or the frame 1 can be mounted to the wall, so that the corner column 9 can be omitted. In that case an upright U-profile (not shown) can for example be mounted to the wall.

[0051] In a preferred embodiment of the fence 10 according to the invention at least two corners 23 of each panel 13 are removed to provide a space for accommodate a link 8 between the upright U-profile 6 of the column 9 and the lying U-profiles 4 of the frame 1, preferably a screw connection.

[0052] Thereby the two top corners 23 of the panel can be removed, or the two bottom corners 23, or the four corners 23. Fig 5 shows three panels 13 of which the two top corners 23 are removed, and Figure 4A shows in detail how the frame 1 can be attached to the upright U-profile 6 of a column 9 by means of a screw connection 8. The edge of the panel 13 is thereby indicated in dotted line. As described above the upright profiles 6 provide sufficient play so that the panels 13 may also expand or

contract thermally in lateral direction. Preferably, the screw 8 is a self-tapping screw, but other fastening means known to the skilled person may also be used, for example rivets. Figure 4B shows how a frame 1 with multiple superimposed panels 13 can be attached to the U-profile 6. In this embodiment each lying U-profile 4 located near the top of a panel is connected to the upright U-profile 6 of the column 9 via a screw connection 8. It is however also possible to connect the other lying U-profile 4 located near the bottom of the panel, or both.

[0053] In a preferred embodiment of the fence 10 according to the invention, the fence 10 comprises at least one door 11 as described above, placed between two consecutive columns 9, in which one of the two columns 9 is adapted for hinged attachment of the door 11 and the other column 9 is adapted for engaging a lock 15 installed in the door 11.

[0054] In Fig 6, two columns 9 of a fence 10 are shown, between which a door 11 is mounted. In an alternative embodiment of the fence 10 instead of a door 11 for example two wings of a hinged gate can be hung on two consecutive columns 9. Each wing can for example be 1 to 2 m wide, but other widths are also possible. The skilled person can thereby provide any known means for closing the gate, for example a lock that engages in the other wing, or a latch to be pushed into the soil. Possibly there may also be a wheel underneath one or both wings, to support part of the weight.

[0055] The invention also relates to a method for mounting a fence 10 as described above, comprising the following steps: a) placing a plurality of upright columns 9 at a predetermined distance from each other; b) sliding from the side the panels 13 between the two adjacent walls 19, 20 of the frame 1; c) sliding the frame 1 from above between the upright profiles 6 of the columns 9.

[0056] Figure 5 shows a fence 10 with two columns 9, in which one frame 1 (left of the figure) is already installed, and one frame 1 (middle of the figure) is partially installed. Typically first all columns 9 are placed and secured in the ground. In the case of a garden typically a hole is made in the ground in which concrete is deposited, in which or on top of which the columns 9 are attached in a manner known by the skilled person. After the concrete has hardened, the frame 1 is typically first placed next to the columns 9, and the panels 13 are slid from the side in the frame 1. In Figure 5, three panels 13 are shown, but other numbers are also possible, as described above. The frame 1 is then lifted, and shifted from above in the U-shaped profiles 6 of the columns 9, until the frame 1 rests at the bottom, or at a certain distance from the bottom. Then the frame 1 is attached to the side profiles 6, for example by means of a screw connection 8 as described above and as shown in Fig 4A.

[0057] The color of the three panels 13 of Fig 5 can for example be selected as follows: dark green for the lower and upper panel 13, and light gray for the panel 13 in the middle. Other combinations of colors are however also possible, according the aesthetic preference of the skilled person.

[0058] In an alternative embodiment of the frame 1 shown in Fig 5, six panels 13 can be inserted in the frame 1, in particular three pairs, whereby the panels 13 located on one side of the fence 10, for example on the inside of the garden, may have a different color than the panels on the outside, for aesthetic reasons, or they can be made of a different material, because one side is for example more exposed to sun or rain. Other numbers of panels are however also possible.

[0059] Optionally one panel 13 can have aesthetic cut-outs, for example one or more square holes, so that the color of the other panel 13 appears through the cut-out. However other shapes than square are also possible, for example, diamond, rectangle, pentagon, hexagon, star, circle, ellipse, or any other form known to the skilled person. The number of cut-outs, the size, and the arrangement thereof can be chosen by the skilled person based on aesthetic considerations.

Claims

1. A frame (1) for a fence (10) whereby;

- the frame (1) comprises a first wall (19) and a second wall (20) placed opposite the first wall (19) at a predetermined distance from the first wall (19) and connected thereto;
- each wall (19, 20) comprises a lattice of lying and upright bars (2, 3) which are connected to each other; **characterised in that**
- the frame (1) comprises at least two opposing profiles (4, 16) located between the first and the second wall (19, 20);
- the frame (1) further comprising at least one panel (13) located between the opposing walls (19,20);
- the opposing profiles (4, 16) receiving opposing edges of said at least one panel (13).

2. The frame (1) for a fence (10) according to claim 1, wherein the at least two opposing profiles (4, 16) are substantially U-shaped profiles, whose openings are turned towards each other, so that the panel (13) can be held between the opposing profiles (4, 16).

3. The frame (1) for a fence (10) according to claim 1 or 2, wherein the first wall (19) comprises a first spacer (12), and the second wall (20) comprises a second spacer (22), whereby the distance between the first and second spacers (12, 22) is sufficient for receiving a panel (13) between the first and second spacers (12, 22) with some play.

4. The frame (1) for a fence (10) according to claim 3, wherein the first spacer (12) is a bar that is part of the lattice of the first wall (19) and the second spacer

(22) is a bar that is part of the lattice of the second wall (20), the first and second spacers (12, 22) being located at a position between two U-profiles (4, 16) that are turned towards each other.

5. The frame (1) for a fence (10) according to any one of the previous claims, wherein the frame (1) is made of metal, preferably steel, more preferably of galvanized and powder coated steel.

6. The frame (1) for a fence (10) according to any one of the previous claims, wherein the lying and upright bars (2, 3) have a substantially circular cross section with a diameter between 2 and 8 mm, preferably 5 mm.

7. The frame (1) for a fence (10) according to any one of the previous claims, wherein the frame (1) comprises at least one panel (13) made of a plastic material.

8. The frame (1) for a fence (10) according to any one of the previous claims, wherein the frame (1) comprises at least one panel (13) having a thickness between 1.0 and 20 mm, preferably between 1.5 and 10 mm, more preferably between 1.5 and 5 mm.

9. The frame (1) for a fence (10) according to any one of the previous claims, wherein at least two panels (13) are received between the first and second walls (19, 20) in height direction of the frame (1), in such a way that a lower and an upper edge of each panel (13) is held between a lower and an upper lying profile (4), whereby the upper profile (4) of a lower panel (13) and the lower profile (4) of the upper panel (13) are mounted substantially adjacent, and whereby the panels (13) have a height between 50 and 120 cm, preferably 60 or 90 cm.

10. The frame (1) for a fence (10) according to any one of the previous claims, wherein the opposing profiles (4) are lying profiles or upright profiles or a combination of both.

11. A door (11) for a fence, **characterized in that** the door (11) comprises the frame (1) according to any one of the claims 1-10, wherein the opposing profiles (16) are upright profiles.

12. A fence (10) **characterized in that** the fence (10) comprises a plurality of upright columns (9) at a predetermined distance from each other in longitudinal direction of the fence (10), and at least one frame (1) according to any one of the claims 1 - 10, placed between two consecutive columns (9), whereby a first column (9) is adapted for receiving a first upright edge of the frame (1) and a second column (9) is adapted for receiving a second upright edge of the frame (1), the first and second upright edges of the frame being located opposite each other.

13. The fence (10) according to claim 12, wherein the columns (9) are substantially U-shaped profiles (6) whose openings of consecutive columns (9) are facing each other, so that the frame (1) can be held between the opposing profiles (6).

14. The fence (10) according to claim 12 or 13, wherein the fence (10) comprises at least one door (11) according to claim 11, placed between two consecutive columns (9), whereby one of the two columns (9) is adapted for hinged attachment of the door (11), and the other column (9) is adapted for engaging a lock (15) installed in the door (11).

15. Method for mounting the fence (10) according to any one of the claims 12-14, comprising the following steps:

a) placing a plurality of upright columns (9) at a predetermined distance from each other,
b) sliding from the side the panels (13) between the two adjacent walls (19, 20) of the frame (1);
c) sliding the frame (1) from above between the upright profiles (6) of the columns (9).

Patentansprüche

1. Rahmen (1) für einen Zaun (10), wobei

- der Rahmen (1) eine erste Wand (19) und eine zweite Wand (20), welche der ersten Wand (19) gegenüber in einem vorgegebenen Abstand von der ersten Wand (19) angeordnet und damit verbunden ist, umfasst;
- jede Wand (19, 20) ein Gitter aus waagrechten und senkrechten Stäben (2, 3) umfasst, welche miteinander verbunden sind;

dadurch gekennzeichnet, dass

- der Rahmen (1) mindestens zwei gegenüberliegende Profile (4, 16) umfasst, die zwischen der ersten und der zweiten Wand (19, 20) angeordnet sind;
- der Rahmen (1) ferner mindestens ein Paneel (13) umfasst, welches zwischen den gegenüberliegenden Wänden (19, 20) angeordnet ist;
- die gegenüberliegenden Profile (4, 16) entgegengesetzte Kanten des mindestens einen Paneels (13) aufnehmen.

2. Rahmen (1) für einen Zaun (10) nach Anspruch 1, wobei die mindestens zwei gegenüberliegenden Profile (4, 16) im Wesentlichen U-förmige Profile sind, deren Öffnungen einander zugewandt sind, so dass das Paneel (13) zwischen den gegenüberlie-

genden Profilen (4, 16) gehalten werden kann.

3. Rahmen (1) für einen Zaun (10) nach Anspruch 1 oder 2, wobei die erste Wand (19) einen ersten Abstandhalter (12) umfasst und die zweite Wand (20) einen zweiten Abstandhalter (22) umfasst, wobei der Abstand zwischen dem ersten Abstandhalter und dem zweiten Abstandhalter (12, 22) zum Aufnehmen eines Paneels (13) zwischen dem ersten und dem zweiten Abstandhalter (12, 22) mit etwas Spiel ausreichend ist.

4. Rahmen (1) für einen Zaun (10) nach Anspruch 3, wobei der erste Abstandhalter (12) ein Stab ist, der Teil des Gitters der ersten Wand (19) ist, und der zweite Abstandhalter (22) ein Stab ist, der Teil des Gitters der zweiten Wand (20) ist, wobei der erste und der zweite Abstandhalter (12, 22) in einer Position zwischen zwei einander zugewandten U-Profilen (4, 16) angeordnet sind.

5. Rahmen (1) für einen Zaun (10) nach einem beliebigen der vorhergehenden Ansprüche, wobei der Rahmen (1) aus Metall, vorzugsweise aus Stahl, insbesondere aus verzinktem und pulverbeschichtetem Stahl, hergestellt ist.

6. Rahmen (1) für einen Zaun (10) nach einem beliebigen der vorhergehenden Ansprüche, wobei die waagrechten und senkrechten Stäbe (2, 3) einen im Wesentlichen kreisförmigen Querschnitt mit einem Durchmesser zwischen 2 und 8 mm, vorzugsweise von 5 mm, aufweisen.

7. Rahmen (1) für einen Zaun (10) nach einem beliebigen der vorhergehenden Ansprüche, wobei der Rahmen (1) mindestens ein Paneel (13), das aus einem Kunststoff hergestellt ist, umfasst.

8. Rahmen (1) für einen Zaun (10) nach einem beliebigen der vorhergehenden Ansprüche, wobei der Rahmen (1) mindestens ein Paneel (13) mit einer Dicke zwischen 1,0 und 20 mm, vorzugsweise zwischen 1,5 und 10 mm, insbesondere zwischen 1,5 und 5 mm, umfasst.

9. Rahmen (1) für einen Zaun (10) nach einem beliebigen der vorhergehenden Ansprüche, wobei mindestens zwei Paneele (13) zwischen der ersten und der zweiten Wand (19, 20) in Höhenrichtung des Rahmens (1) aufgenommen werden, derart, dass eine untere und eine obere Kante jedes Paneels (13) zwischen einem unteren und einem oberen waagrechten Profil (4) gehalten wird, wobei das obere Profil (4) eines unteren Paneels (13) und das untere Profil (4) des oberen Paneels (13) im Wesentlichen benachbart angebracht sind und wobei die Paneele (13) eine Höhe zwischen 50 und 120 cm, vorzugsweise von 60 oder 90 cm, aufweisen.

10. Rahmen (1) für einen Zaun (10) nach einem beliebigen der vorhergehenden Ansprüche, wobei die gegenüberliegenden Profile (4) waagrechte Profile oder senkrechte Profile oder eine Kombination aus beiden sind.

11. Tür (11) für einen Zaun, **dadurch gekennzeichnet, dass** die Tür (11) den Rahmen (1) nach einem beliebigen der Ansprüche 1-10 umfasst, wobei die gegenüberliegenden Profile (16) senkrechte Profile sind.

12. Zaun (10), **dadurch gekennzeichnet, dass** der Zaun (10) mehrere senkrechte Säulen (9) in einem vorgegebenen Abstand voneinander in Längsrichtung des Zauns (10) und mindestens einen Rahmen (1) nach einem beliebigen der Ansprüche 1-10, der zwischen zwei aufeinanderfolgenden Säulen (9) angeordnet ist, umfasst, wobei eine erste Säule (9) zum Aufnehmen einer ersten senkrechten Kante des Rahmens (1) ausgebildet ist und eine zweite Säule (9) zum Aufnehmen einer zweiten senkrechten Kante des Rahmens (1) ausgebildet ist, wobei die erste und die zweite senkrechte Kante des Rahmens einander entgegengesetzt angeordnet sind.

13. Zaun (10) nach Anspruch 12, wobei die Säulen (9) im Wesentlichen U-förmige Profile (6) sind, deren Öffnungen von aufeinanderfolgenden Säulen (9) einander zugewandt sind, so dass der Rahmen (1) zwischen den gegenüberliegenden Profilen (6) gehalten werden kann.

14. Zaun (10) nach Anspruch 12 oder 13, wobei der Zaun (10) mindestens eine Tür (11) nach Anspruch 11 umfasst, welche zwischen zwei aufeinanderfolgenden Säulen (9) angeordnet ist, wobei eine der beiden Säulen (9) für die gelenkige Befestigung der Tür (11) ausgebildet ist und die andere Säule (9) zum Eingreifen mit einem in der Tür (11) angebrachten Schloss (15) ausgebildet ist.

15. Verfahren zum Montieren des Zauns (10) nach einem beliebigen der Ansprüche 12-14, umfassend folgende Schritte:

a) Anordnen mehrerer senkrechter Säulen (9) in einem vorgegebenen Abstand voneinander;
b) Einschieben der Paneele (13) zwischen die beiden benachbarten Wände (19, 20) des Rahmens (1) von der Seite;
c) Einschieben des Rahmens (1) von oben zwischen die senkrechten Profile (6) der Säulen (9).

Revendications

1. Cadre (1) pour une clôture (10),

- le cadre (1) comprenant une première paroi (19) et une deuxième paroi (20) placée en face de la première paroi (19) à une distance prédéterminée da la première paroi (19) et reliée à celle-ci ;
- chaque paroi (19, 20) comprenant un treillis de barres horizontales et verticales (2, 3) qui sont reliées les unes aux autres ;

caractérisé en ce que

- le cadre comprend au moins deux profilés opposés (4, 16) situés entre la première et la deuxième paroi (19, 20) ;
- le cadre (1) comprenant en outre au moins un panneau (13) situé entre les parois opposées (19, 20) ;
- les profilés opposés (4, 16) recevant des bords opposés dudit au moins un panneau (13).

2. Cadre (1) pour une clôture (10) selon la revendication 1, dans lequel lesdits au moins deux profilés opposés (4, 16) sont des profilés sensiblement en forme de U dont les ouvertures sont tournées l'une vers l'autre de sorte que le panneau (13) peut être maintenu entre les profilés opposés (4, 16).

3. Cadre (1) pour une clôture (10) selon la revendication 1, dans lequel la première paroi (19) comprend un premier espaceur (12) et la deuxième paroi (20) comprend un deuxième espaceur (22), la distance entre les premier et deuxième espaceurs (12, 22) étant suffisante pour recevoir un panneau (13) entre les premier et deuxième espaceurs (12, 22) avec un certain jeu.

4. Cadre (1) pour une clôture (10) selon la revendication 3, dans lequel le premier espaceur (12) est une barre qui fait partie du treillis de la première paroi (19) et le deuxième espaceur (22) est une barre qui fait partie du treillis de la deuxième paroi (20), les premier et deuxième espaceurs (12, 22) étant situés dans une position entre deux profilés entre U (4, 16) qui sont tournés l'un vers l'autre.

5. Cadre (1) pour une clôture (10) selon l'une quelconque des revendications précédentes, dans lequel le cadre (1) est réalisé en métal, de préférence en acier, mieux encore en acier galvanisé ou revêtu par poudre.

6. Cadre (1) pour une clôture (10) selon l'une quelconque des revendications précédentes, dans lequel les barres horizontales et verticales (2, 3) ont une section transversale sensiblement circulaire ayant un diamètre compris entre 2 et 8 mm, de préférence de 5 mm.

7. Cadre (1) pour une clôture (10) selon l'une quelconque des revendications précédentes, dans lequel le cadre (1) comprend au moins un panneau (13) réalisé dans un matériau plastique.

8. Cadre (1) pour une clôture (10) selon l'une quelconque des revendications précédentes, dans lequel le cadre (1) comprend au moins un panneau (13) ayant une épaisseur comprise entre 1,0 et 20 mm, de préférence entre 1,5 et 10 mm, mieux encore entre 1,5 et 5 mm.

9. Cadre (1) pour une clôture (10) selon l'une quelconque des revendications précédentes, dans lequel au moins deux panneaux (13) sont reçus entre les première et deuxième parois (19, 20) dans le sens de la hauteur du cadre (1) de telle manière qu'un bord inférieur et un bord supérieur de chaque panneau (13) soit maintenu entre un profilé horizontal inférieur et un profilé horizontal supérieur (4), le profilé supérieur (4) d'un panneau inférieur (13) et le profilé inférieur (4) du panneau supérieur (13) étant montés de manière sensiblement adjacente, et les panneaux (13) ayant une hauteur comprise entre 50 et 120 cm, de préférence de 60 ou 90 cm.

10. Cadre (1) pour une clôture (10) selon l'une quelconque des revendications précédentes, dans lequel les profilés (4) opposés sont des profilés horizontaux ou verticaux ou une combinaison des deux.

11. Porte (11) pour une clôture, **caractérisée en ce que** la porte (11) comprend le cadre (1) selon l'une quelconque des revendications 1 - 10, dans lequel les profilés opposés (16) sont des profilés verticaux.

12. Clôture (10) **caractérisé en ce que** la clôture (10) comprend une pluralité de colonnes verticales (9) à une distance prédéterminée les unes des autres dans la direction longitudinale de la clôture (10), et au moins un cadre (1) selon l'une quelconque des revendications 1 - 10, placé entre deux colonnes (9) consécutives, une première colonne (9) étant adaptée pour recevoir un premier bord vertical du cadre (1) et une deuxième colonne (9) étant adaptée pour recevoir un deuxième bord vertical du cadre (1), les premier et deuxième bords verticaux du cadre étant situés en face l'un de l'autre.

13. Clôture (10) selon la revendication 12, dans laquelle les colonnes (9) sont des profilés (6) sensiblement en forme de U dont les ouvertures de colonnes (9) consécutives se font face de sorte que le cadre (1) peut être maintenu entre les profilés (6) opposés.

14. Clôture (10) selon la revendication 12 ou 13, dans

laquelle la clôture (10) comprend au moins une porte (11) selon la revendication 11 placée entre deux colonnes (9) consécutives, une des deux colonnes (9) étant adaptée pour une fixation articulée de la porte (11) et l'autre colonne (9) étant adaptée pour entrer en prise avec une serrure (15) installée dans la porte (11).

15. Procédé pour monter la clôture (10) selon l'une quelconque des revendications 12 - 14, comprenant les étapes suivantes:

a) placer une pluralité de colonnes verticales (9) à une distance prédéterminée les unes des autres,
b) glisser par le côté les panneaux (13) entre les deux parois adjacentes (19, 20) du cadre (1),
c) glisser le cadre (1) par le dessus entre les profilés verticaux (6) des colonnes (9).

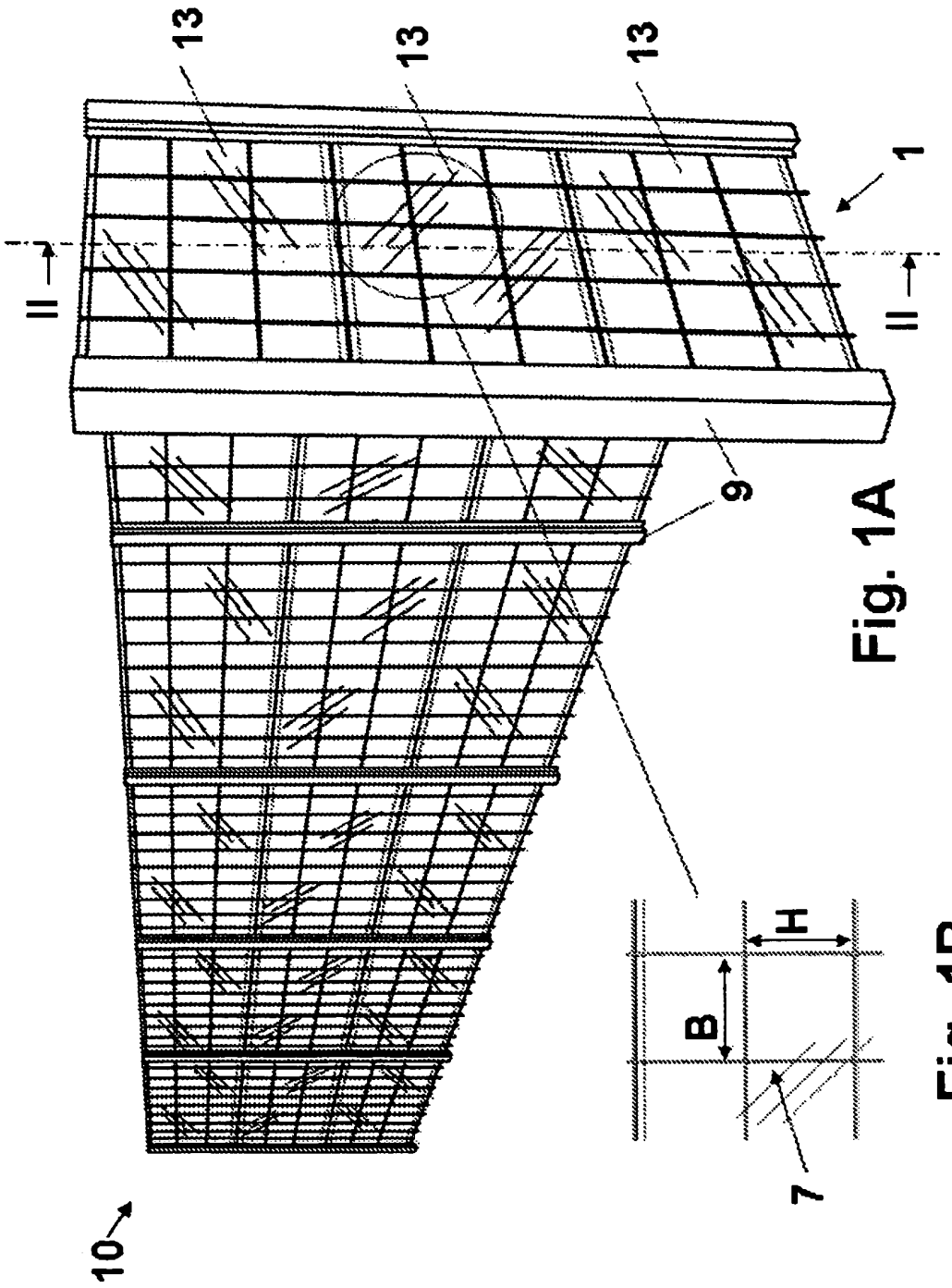

Fig. 1A

Fig. 1B

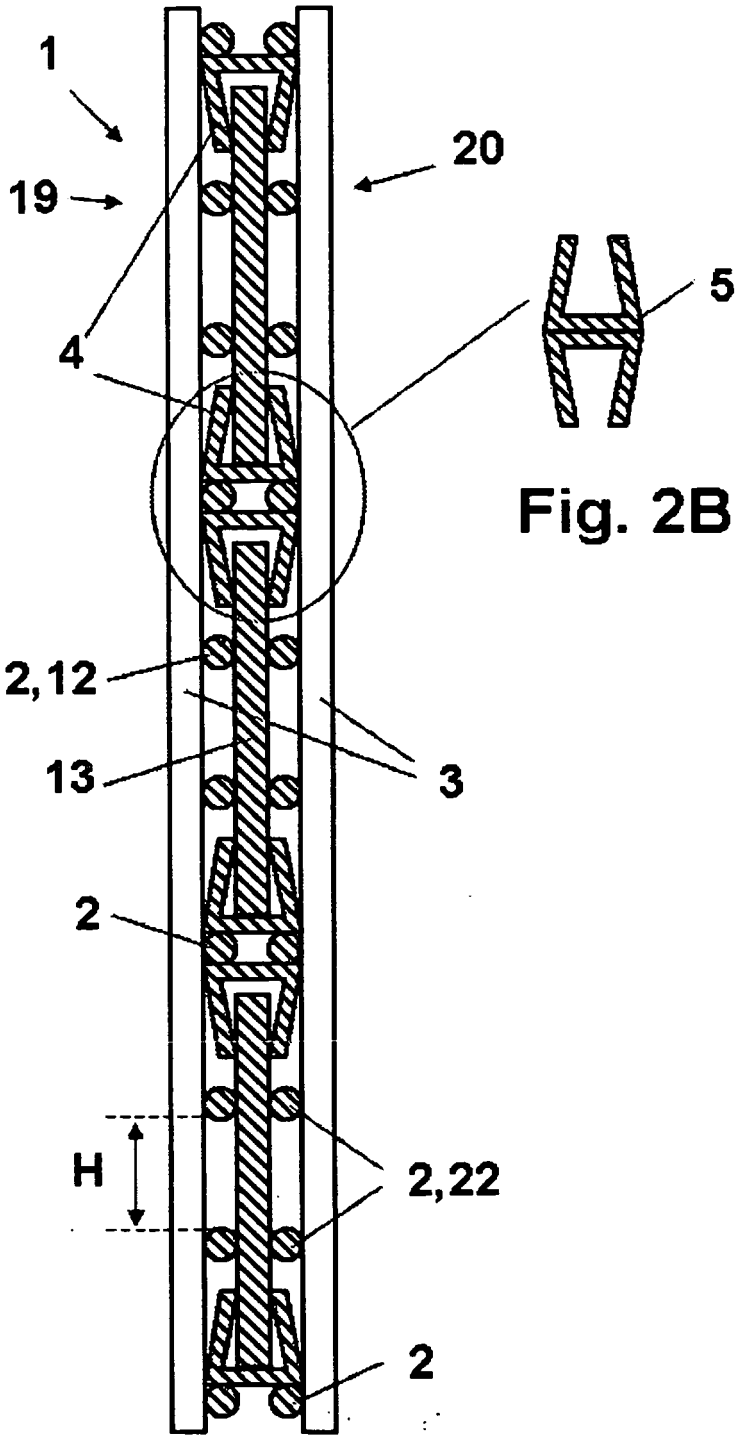

Fig. 2B

Fig. 2A

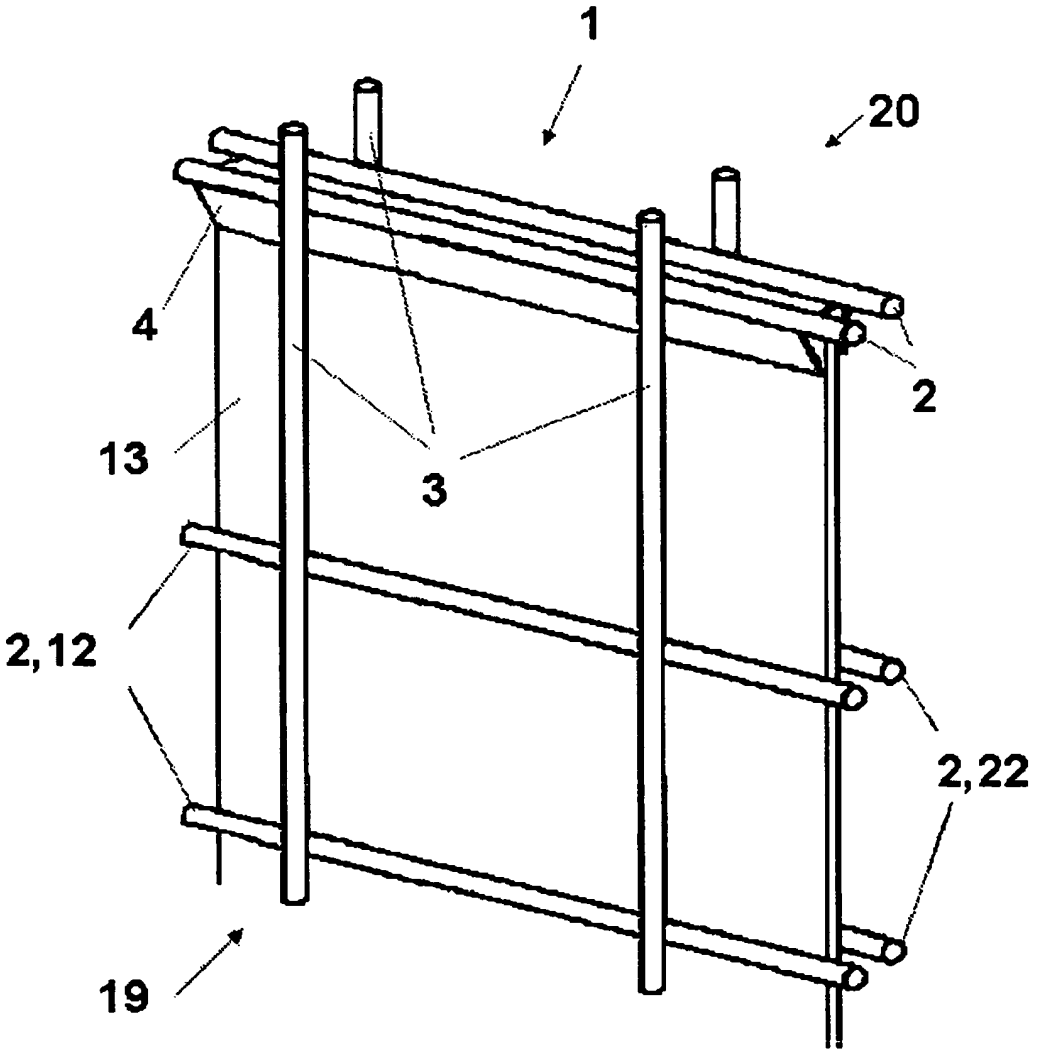

Fig. 2C

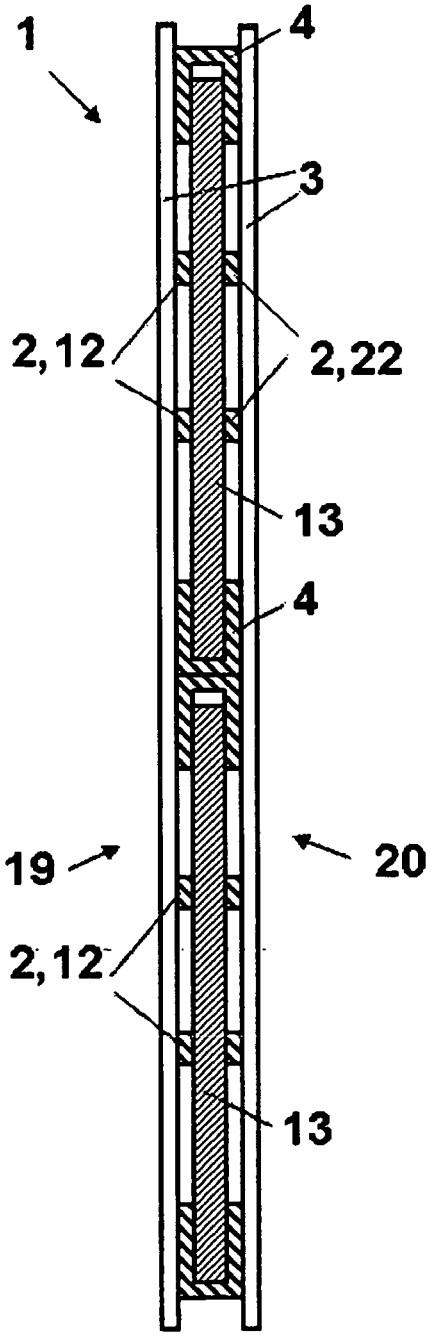

Fig. 3A

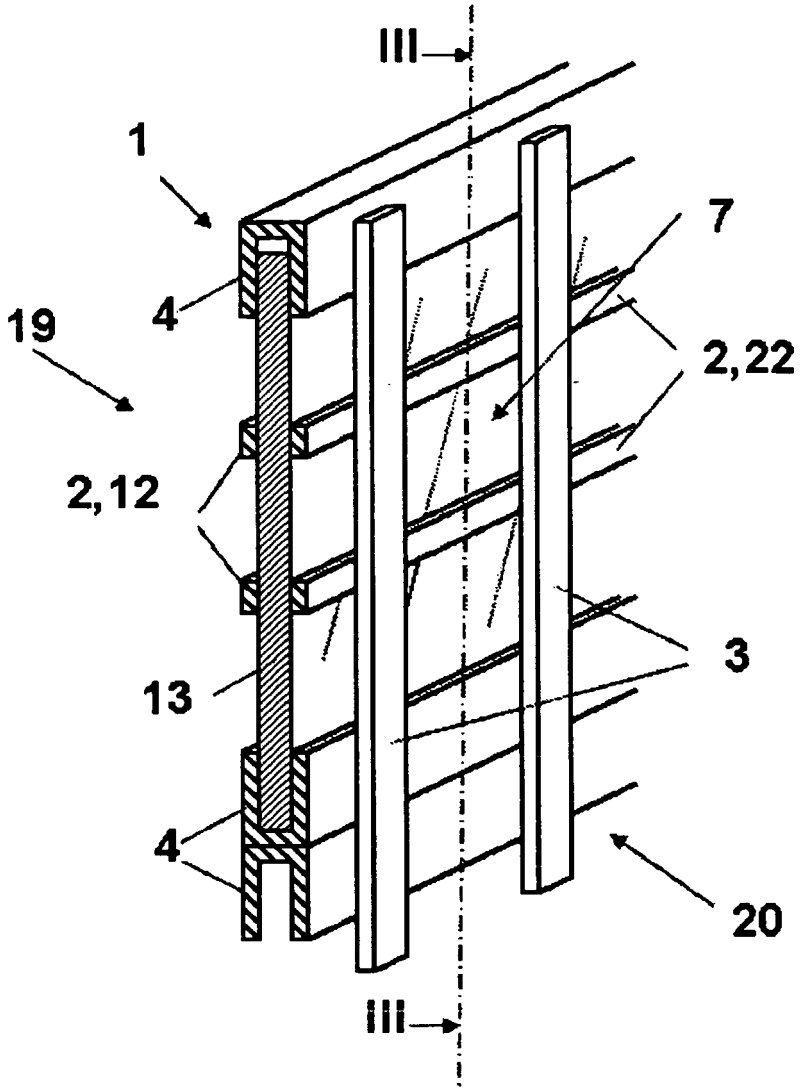

Fig. 3B

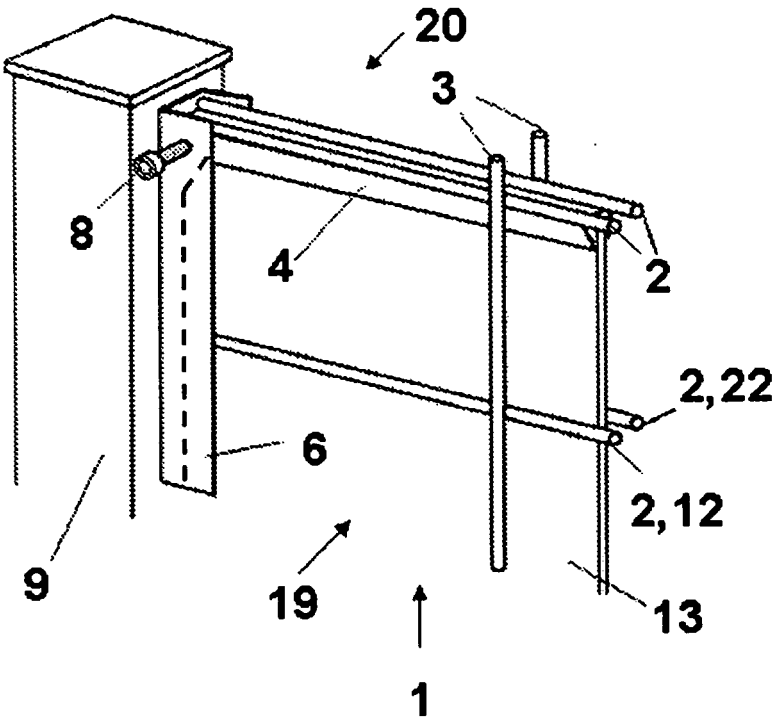

Fig. 4A

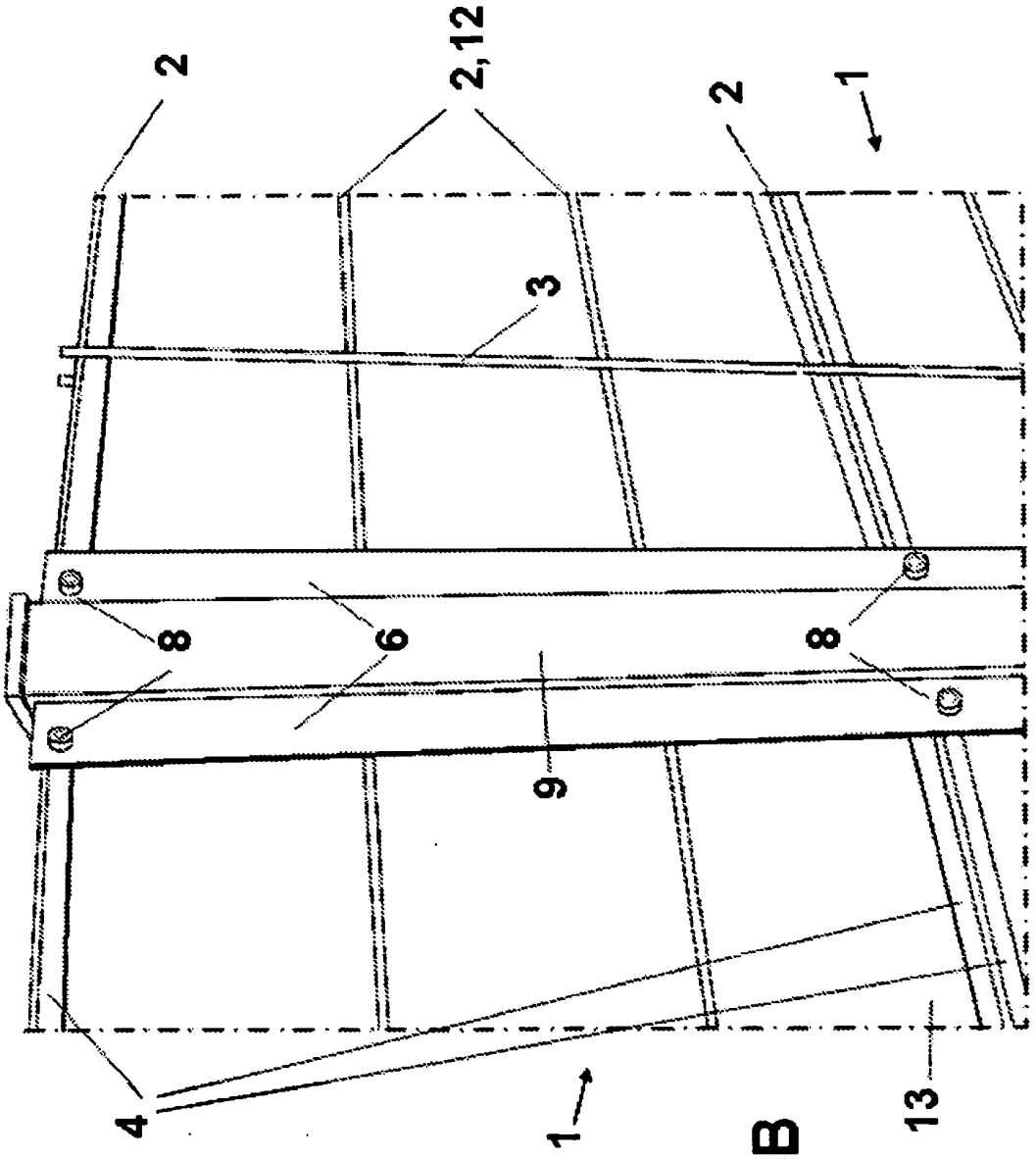

Fig. 4B

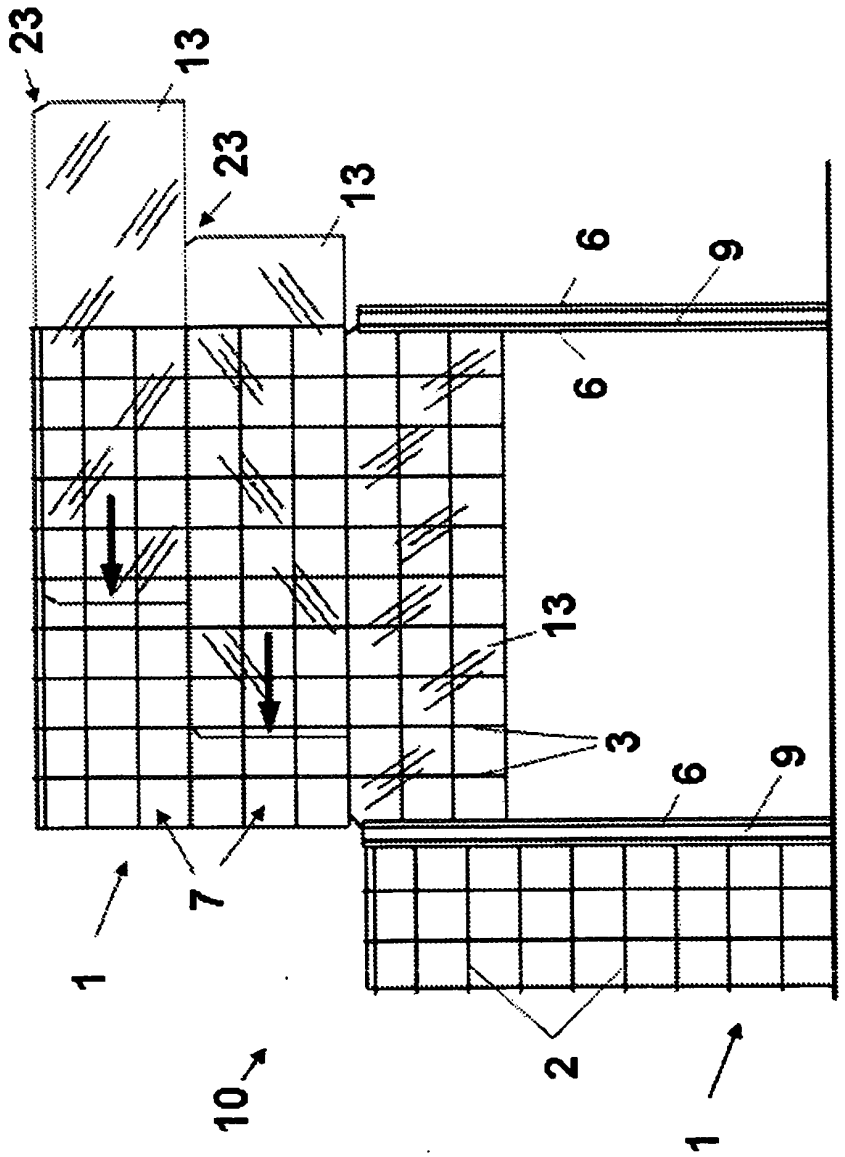

Fig. 5

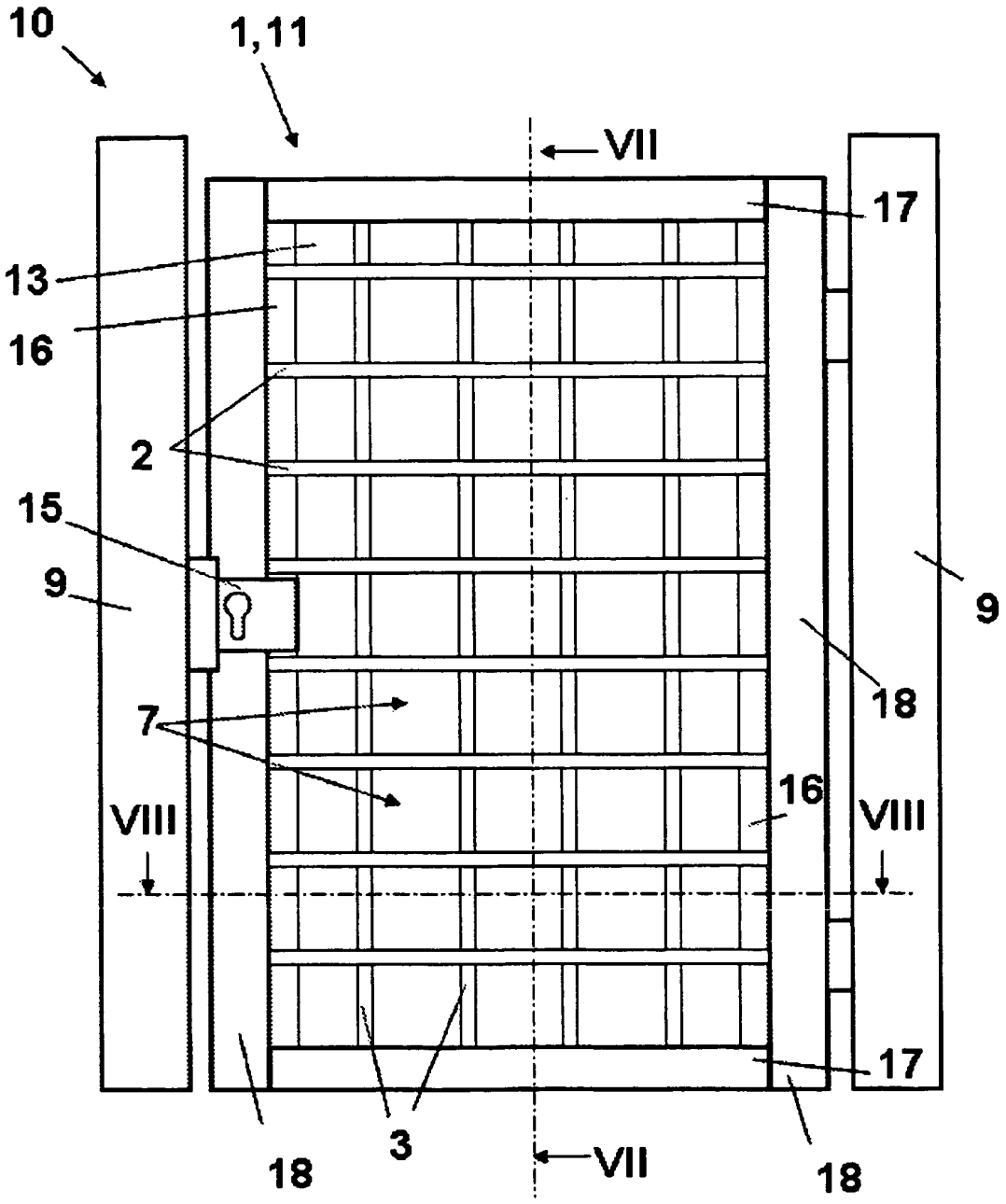

Fig. 6

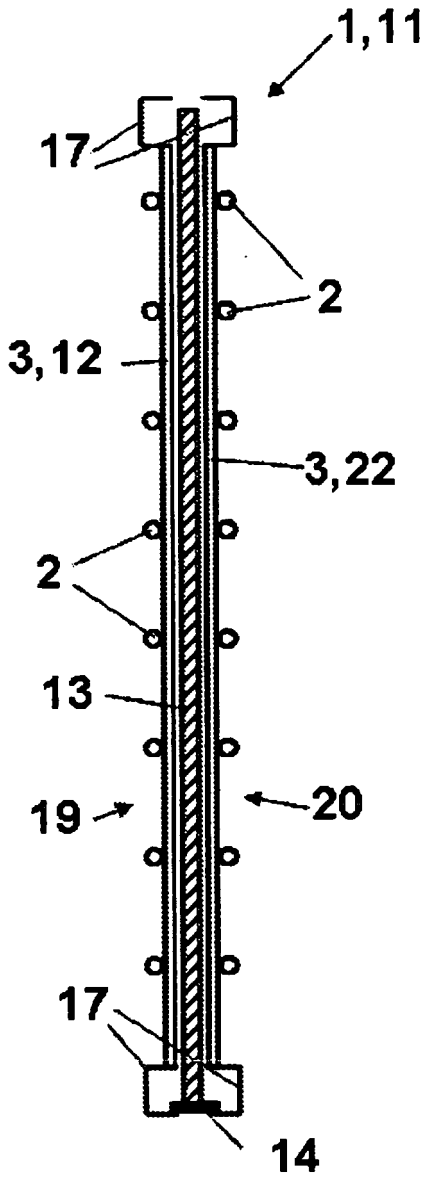

Fig. 7

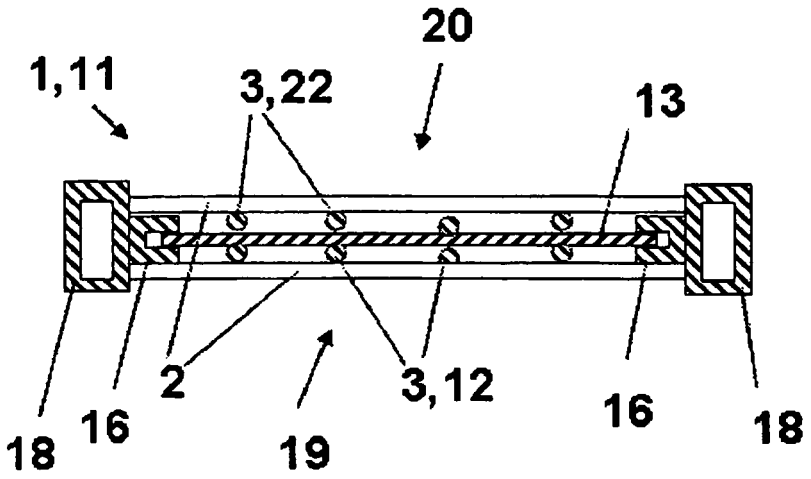

Fig. 8

REFERENCES CITED IN THE DESCRIPTION

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