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DESCRIPTION

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to a wall system and a wall segment.

RELATED ART

[0002] Wall modules which can be connected to each other and which together make up a larger wall section have been described in for example SE369090. Here a linking element is used to connect the wall modules to each other. Other types of wall modules which are connected to each other without a linking element have also been described. For example in GB599011 one side of each wall module comprises a first interengaging member and the other side comprises a second interengaging member. Said first interengaging member can be engaged with a second interengaging member of another wall module to make up a larger wall segment.

SUMMARY

[0003] An object of the invention is to provide an improved wall system with wall modules which can be easily mounted to each other.

[0004] This is achieved by a wall system according to claim 1.

[0005] This is also achieved by a wall segment according to claim 12.

[0006] According to one aspect of the invention a wall system comprising at least one wall module and at least one linking element is provided. Said wall module comprising a substantially rectangular plate. Said rectangular plate comprising two side edges, one top edge and one bottom edge, said side edges each comprising a side edge bent configuration, wherein said side edge bent configuration comprises a first side bend, a second side bend and a third side bend, wherein all three side bends are substantially 180° or 160-200 ° and are provided along different bending lines being parallel with the side edges of the plate, whereby the side edge bent configuration comprises a first bent side part provided along the side edge of the plate between the first side bend and the second side bend, a second bent side part provided along the side edge of the plate between the second side bend and the third side bend and a third bent side part provided along the side edge of the plate between the third side bend and an open end side or possibly a fourth bent side part of the plate, wherein said first bent side part is provided between the plate and said second bent side part and wherein said third bent side part is provided in between said first and said second bent side parts and

which third bent side part is smaller than both the first and the second bent side parts. Said linking element comprises an elongated rectangular plate (33; 33') comprising two side parts (45a, 45b; 45a', 45b') along a length of said plate (33; 33') and a middle part (47; 47') along the length of said plate between said two side parts, wherein said two side parts (45a, 45b; 45a', 45b') comprise locking features (43a, 43b; 201), wherein the radius of the second side bend (13b) of the wall module is provided such that a side part (45a, 45b; 45a', 45b') of the linking element (31; 31') can be provided into an opening (17) between the first and third bent side parts (15a, 15c) of the wall module and during the connection will be passing the third bent side part (15c) which finally will lock a side part (45a, 45b; 45a', 45b') of the linking element (31; 31') within the side edge bent configuration (11) of the wall module (1) when a wall module and a linking element have been connected, whereby a width (w1) of the middle part (47; 47') corresponds substantially to a width (w2) of the third bent side part (15c) of the wall module (1) times two.

[0007] According to another aspect of the invention a wall segment is provided comprising a wall system as defined above comprising at least two wall modules connected by at least one linking element.

[0008] Hereby a wall system is provided comprising a wall module which can be built from a rectangular plate by just bending the side edges of the plate. The side edges of the plate are bent three times each for providing a side edge bent configuration with an opening along its side edges for receiving a linking element when two wall modules are connected. This provides for an easily built wall module with connection capabilities. The locking features of the linking element and its cooperation with the third bent side part in the side edge bent configuration of the wall module provides for a stable wall construction.

[0009] In one embodiment of the invention a radius of the second side bend is provided such that an opening into the side edge bent configuration is provided between the first and third bent side parts for receiving a linking element.

[0010] A further object of the invention is to provide a wall system with wall modules which can be easily mounted to a floor strip.

[0011] This is achieved by a wall module, wherein said bottom edge of said rectangular plate comprises a bottom edge bent configuration, wherein said bottom edge bent configuration comprises a first bottom bend and a second bottom bend, wherein the first and second bottom bends are substantially 180° and are provided along different bending lines being parallel with the bottom edge of the plate, whereby the bottom edge bent configuration comprises a first bent bottom part provided along the bottom edge of the plate between the first bottom bend and the second bottom bend, a second bent bottom part provided along the bottom edge of the plate between the second bottom bend and either a third bottom bend or an open bottom end side of the panel, wherein the first bent bottom part will be provided between the plate and the second bent bottom part.

[0012] Hereby a wall module is provided which also has a bottom edge bent configuration along its bottom edge and the wall module can be provided mounted to a floor strip. Hereby an easy mounting of the wall module to a floor is achieved and furthermore a water proof mounting can easily be assured.

[0013] In one embodiment of the invention a radius of the second bottom bend is provided such that an opening into the bottom edge bent configuration is provided between the first and second bent bottom parts for receiving a floor strip.

[0014] In one embodiment of the invention said bottom edge bent configuration comprises also a third bottom bend being substantially 180° and being provided along a bending line which is parallel with the bottom edge of the plate and hereby said bottom edge bent configuration further comprises a third bent bottom part provided along the bottom edge of the plate between the third bottom bend and an open bottom end side of the panel, which third bent bottom part being provided in between said first and said second bent bottom parts and which third bent bottom part is smaller than both the first and the second bent bottom parts.

[0015] In one embodiment of the invention a radius of the first bottom bend is provided such that the first, second and third bend side parts of the side edges are provided in between a plane in which the first bent bottom part is provided and a plane in which a center part of the plate is provided. Hereby a linking element which will link two wall modules to each other will always be provided inside a floor strip when the wall modules also are mounted to such a floor strip. If the linking element is provided along the whole length of the wall module and hereby also down to the floor inside the floor strip water cannot pass outside. Hereby a water proof mounting is achieved.

[0016] In one embodiment of the invention said locking features extend from a plane of the elongated rectangular plate of the linking element, which locking features will be locked inside the side edge bent configuration by the third bent side part when a wall module and a linking element have been connected.

[0017] In one embodiment of the invention a length of said linking element corresponds substantially to a length of the wall module.

[0018] In one embodiment of the invention said locking features are double folds of the plate along its side edges hereby providing two side parts of the linking element comprising double folded plate and a middle part of the linking element comprising a single layer of the plate.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019]

Figure 1 is a perspective view of a wall module according to one embodiment of the invention.

Figure 2 shows a blank of a wall module according to one embodiment of the invention before edges of the wall module have been bent.

Figure 3a is a cross section along line A:A in Figure 1 of the wall module showing a side edge bent configuration of one of the sides edges.

Figure 3b is a cross section of a side edge bent configuration of a wall module according to another embodiment of the invention.

Figure 4a is a cross section along line B:B in Figure 1 showing a bottom edge bent configuration of a bottom part of a wall module according to one embodiment of the invention.

Figure 4b is a cross section showing a bottom edge bent configuration of a bottom part of a wall module according to another embodiment of the invention.

Figure 5 is a cross section top view of two connected wall modules according to one embodiment of the invention.

Figures 6a and 6b show a linking element according to one embodiment of the invention.

Figures 6c and 6d show a linking element according to another embodiment of the invention.

Figures 6e and 6f show a linking element according to another embodiment of the invention.

Figures 6g and 6h show a linking element according to another embodiment of the invention.

Figures 6i and 6j show a linking element according to another embodiment of the invention.

Figure 7 is a cross section top view of two connected wall modules of sandwich type according to one embodiment of the invention.

Figure 8 is a cross section side view of a wall module according to one embodiment of the invention when the wall module is connected to a floor strip.

Figure 9 is a cross section side view of a wall module of sandwich type according to one embodiment of the invention when the wall module is connected to a floor strip.

Figure 10 shows five wall modules according to different embodiments of the invention connected to each other and to a floor strip.

Figure 11 is a cross section top view of two wall modules according to one embodiment of the invention connected to each other by a corner linking element according to one embodiment of the invention.

Figures 12a and 12b show schematically a corner linking element according to one embodiment of the invention.

Figure 13 shows an alternative corner of a wall module.

DETAILED DESCRIPTION OF EMBODIMENTS

[0020] Figure 1 is a perspective view of a wall module 1 according to one embodiment of the invention. Figure 2 shows a blank 2 of the wall module 1 shown in Figure 1 before edges of the wall module 1 have been bent. Side edge bending lines 101a, 101b, 101c along each side edge of the blank and top and bottom bending lines 102a, 102b, 102c along a top and a bottom of the blank are shown in the blank 2. Side edges and top and bottom edges of the blank will be bent along these bending lines for providing bent configurations of the wall module as will be further described below. Corners 4a, 4b, 4c, 4d have been cut out from the blank 2 such that both side edges and top and bottom edges of the wall module can be bent. In another embodiment of the invention only the two side edges and a bottom edge will be bent, i.e. not the top edge. In this embodiment only two corners 4a, 4b need to be cut out.

[0021] In the blank 2 according to the embodiment shown in Figure 2 two recesses 103a, 103b are shown in a top edge of the blank. Material has been cut out from outer edges of the innermost top bending line 102a. These recesses 103a, 103b can be used for removing a linking element 31 from two connected wall modules.

[0022] According to the invention a wall module 1 comprising a substantially rectangular plate 3 is provided. Said plate can be made from a metal such as a sheet metal for example with a thickness from 0.3 to 2.5 mm. Other thicknesses may also be possible. The material of the plate should be possible to bend. Furthermore some degree of resilience in the bending is suitable such that a linking element can be forced into a side opening in a side edge bent configuration of the wall module as will be further described below.

[0023] The rectangular plate 3 of the wall module 1 comprises two side edges 5a, 5b, one top edge 7 and one bottom edge 9. According to the invention said side edges 5a, 5b comprise each a side edge bent configuration 11. Figure 3a is a cross section along the line A:A through the wall module 1 of Figure 1 showing one of the side edges 5a of the wall module 1. In this view the side edge bent configuration 11 which is present in both side edges 5a, 5b can be seen. The side edge bent configuration 11 comprises a first side bend 13a, a second side bend 13b and a third side bend 13c, wherein all three side bends 13a,b,c are substantially 180° and they are provided along different bending lines 101a, 101b, 101c being parallel with the side edges 5a, 5b of the plate 3. A fourth side bend could as well be provided in some embodiments for example for compensating a possible inexactness of a size of the plate 3. This can be seen in Figure 3b. These side edge bending lines 101a, 101b, 101c can be seen in Figure 2 where the blank is shown. The bends may not always be exactly 180°. Small deviations from 180° should also be covered by this invention. Even larger deviations from 180° should be covered by the invention, such as 160-200°. A larger bend than 180° of the second side bend 13b and a smaller bend than 180° of the third side bend 13c can in some cases be advantageous for improving a locking of a linking element inside the side edge bent configuration which will be further described below. Furthermore the side edge bent

configuration 11 comprises a first bent side part 15a provided along the side edge 5a, 5b of the plate 3 between the first side bend 13a and the second side bend 13b, a second bent side part 15b provided along the side edge of the plate between the second side bend 13b and the third side bend 13c and a third bent side part 15c provided along the side edge of the plate between the third side bend 13c and an open end side 16 of the plate 3. If a fourth side bend is provided a fourth bent side part will also be provided and the third bent side part 15c will then be provided between the third side bend 13c and a fourth side bend. The first, second and third bent side parts 15a,b,c are indicated also in the blank in Figure 2 even though they have not yet been bent in the blank. The open end side 16 is also shown in the blank. The second bent side part 15b is overlying said first bent side part 15a in the side edge bent configuration 11 and the third bent side part 15c is provided in between said first and said second bent side parts 15a, 15b in the side edge bent configuration 11. Furthermore the third bent side part 15c is smaller than both the first and the second bent side parts 15a, 15b. Hereby there will be an open space 14 provided inside the third bent side part 15c and between the first and second bent side parts 15a, 15b. In this open space 14 side parts 45a, 45b of a linking element 31 will be provided when two modules are connected which will be further described below. A radius r_1 of the second side bend 13b is provided such that an opening 17 is provided between the first and third bent side parts 15a, 15c for receiving a linking element 31 into the side edge bent configuration 11. The radius r_1 of the second side bend 13b can be provided such that a width w of the opening 17 between the first and third bent side parts 15a, 15c is between for example one and two times a thickness of a plate from which the linking element 31 is made. However the width of the opening 17 may be even smaller. If there is some flexibility in the second side bend 13b a linking element 31 can be forced into the opening 17 of the side edge bent configuration 11.

[0024] Figure 3b is a cross section of a side edge bent configuration 11' of a wall module according to another embodiment of the invention. Most of the details are the same as in the embodiment shown in Figure 3a and will not be described again but in this embodiment a fourth side bend 13d being substantially 180 degrees is provided. Hereby also a fourth bent side part 15d is provided between the third bent side part 15c' and the open end side 16'. Furthermore an optional smaller intermediate bend 13e is provided in this embodiment. This intermediate bend 13e is for example less than 50 degrees and provided between the third side bend 13c' and the fourth side bend 13d only for allowing an additional clamping of a linking element.

[0025] When two wall modules 1 should be connected a linking element 31 which will be further described below in relation to Figures 6a-6j is used and a linking element side part is inserted into the opening 17 of the side edge bent configuration. This is described further below.

[0026] Figure 4a is a cross section through the wall module along the line B:B in Figure 1 showing a bottom part of the wall module 1. In this embodiment of the invention the bottom edge 9 of the plate 3 comprises a bottom edge bent configuration 21 which is similar to the side edge bent configuration 11. In Figure 4b an alternative bottom edge bent configuration

121 is shown. However in another embodiment of the invention the bottom edge 9 of the plate 3 can be provided without a bent configuration. In the embodiment shown in Figure 1 and 2 also the top edge 7 comprises a bent configuration 21'. However this is mainly because of symmetry reasons. The invention can as well be provided without a bent configuration of the top edge 7.

[0027] The bottom edge bent configuration 21 comprises in this embodiment a first bottom bend 23a, a second bottom bend 23b and a third bottom bend 23c, wherein the first, second and third bottom bends 23a,b,c all are substantially 180° and are provided along different bending lines 102a, 102b, 102c being parallel with the bottom edge 9 of the plate 3. These bending lines 102a,b,c are shown in the blank in Figure 2. The bends may not be exactly 180° which is covered by the invention. Hereby the bottom edge bent configuration 21 comprises a first bent bottom part 25a provided along the bottom edge 9 of the plate 3 between the first bottom bend 23a and the second bottom bend 23b, a second bent bottom part 25b provided along the bottom edge of the plate between the second bottom bend 23b and the third bottom bend 23c and a third bent bottom part 25c provided between the third bottom bend 23c and an open bottom end side 26 of the panel. In the embodiment shown in Figures 1,2 and 4a the bottom edge bent configuration 21 is similar to the side edge bent configuration 11 shown in Figure 3a and comprises hereby three bottom bends 23a,b,c and three bent bottom parts 25a,b,c. The third bent bottom part 25c is provided in between said first and said second bent bottom parts 25a, 25b and the third bent bottom part 25c is smaller than both the first and the second bent bottom parts 25a, 25b. The three bent bottom parts 25a,b,c are indicated in the blank of Figure 2 even though they have not been bent yet in the blank.

[0028] Figure 4b shows a bottom edge bent configuration 121 according to another embodiment of the invention where only two bent bottom parts 125a, 125b and two bottom bends 123a, 123b are provided. Hereby the second bent bottom part 125b is provided between the second bottom bend 123b and an open bottom end side 126 of the panel.

[0029] The second bent bottom part 25b; 125b is overlying said first bent bottom part 25a; 125a in the bottom edge bent configuration 21; 121 and a radius r_2 of the second bottom bend 23b; 123b is provided such that an opening 27; 127 is provided between the first and second bent bottom parts 25a, 25b; 125a, 125b (possibly with a third bent bottom part 25c in between as in Figure 4a) for receiving a floor strip. In these embodiments of the invention where also the bottom edge 9 of the wall module 1 comprises a bent configuration 21; 121 as described above the wall module 1 can be mounted to a floor strip, i.e. a strip provided in a perpendicular relationship to a floor. Hereby an easy way of mounting the wall module to a floor is achieved. Furthermore a convenient way of providing a water proof mounting of wall modules can be provided as will be further described below. If three bottom bends 23a, b, c are provided and hereby also a third bent bottom part 25c as shown in Figure 4a the third bent bottom part 25c may help in providing a robust and stable mounting of the wall module 1 to the floor strip. If the floor strip comprises some kind of locking detail at a certain distance from the floor level the wall module can be forced down onto the floor strip until the third bent bottom part 25c has passed such a locking detail. If the material of the plate 3 and the bends of the bottom edge

bent configuration 21 provide some resilience to the bottom edge bent configuration 21 the third bent bottom part 25c will provide a locking feature by locking the wall module 1 in place when the locking detail has been passed. However, in another embodiment of the invention (as shown in Figure 4b) only two bottom bends 123a, b are provided and no locking feature needs to be provided. The wall module 1 will then be provided hanging over the floor strip when mounted. A water proof construction can still be achieved in a convenient way which will be further described below.

[0030] In the embodiment of the invention as shown in Figures 1 and 4a and 4b a radius r_3 of the first bottom bend 23a; 123a is provided such that the first, second and third bent side parts 15a, 15b, 15c of the side edges 5a, 5b are provided in between a plane in which the first bent bottom part 25a; 125a is provided and a plane in which a center part of the plate 3 is provided. In other words the side edge bent configuration 11 will be provided closer to the plane of a center part of the plate 3 than the bottom edge bent configuration 21; 121. Hereby a linking element which will link two wall modules to each other will always be provided inside a floor strip when the wall modules also are mounted to such a floor strip. If the linking element 31 is provided along the whole length of the wall module and hereby also down to the floor inside the floor strip water cannot pass outside. Hereby a water proof mounting is achieved.

[0031] Figure 5 is a cross section top view of two connected wall modules 1 according to one embodiment of the invention. In this view the side edge bent configuration 11 of the two wall modules 1 can be seen and furthermore a linking element 31 according to the invention. The linking element 31 is inserted into the openings 17 of the side edge bent configurations 11 to link the two wall modules together.

[0032] According to one aspect of the invention a wall system is provided, which wall system comprises at least one wall module 1 and at least one linking element 31; 31'. According to another aspect of the invention a wall segment is provided comprising at least two wall modules 1 which are linked to each other by a linking element 31; 31'.

[0033] Figures 6a and 6b show a linking element 31 in a top view and in a perspective view according to one embodiment of the invention. The linking element 31 comprises an elongated rectangular plate 33 having two linking element side edges 35a, 35b, one linking element top edge 37 and one linking element bottom edge 39. The linking element 31 comprises further locking features 43a, 43b which extend from a plane of the elongated rectangular plate 33 of the linking element 31. The locking features will be locked inside the side edge bent configuration 11 by the third bent side part 15c when a wall module and a linking element have been connected. The locking features 43a, 43b are in this embodiment double folds of the plate 33 along its side edges 35a, 35b. However other alternatives for locking features are possible and some examples will be described below in relation to Figures 6c-6j.

[0034] Two side parts 45a, 45b of the linking element 31 comprising double folded plate and a middle part 47 of the linking element 31 comprising a single layer of the plate are hereby provided. A width w_1 of the middle part 47 of the linking element 31 corresponds substantially

to a width w_2 of the third bent side part 15c of the wall module 1 times two. Hereby, when two wall modules 1 are linked together by a linking element 31 as shown in Figure 5 the middle part 47 of the linking element 31 will be positioned in the openings 17 of the side edge bent configurations 11 of the two wall modules between the third bent side part 15c and the first bent side part 15a. The side parts 45a, 45b of the linking element 31 will be positioned further into the side edge bent configuration 11, i.e. in the open space 14 as shown in Figures 3a and 3b. Hereby the third bent side part 15c will lock the side parts/locking features 45a, 45b, 43a, 43b of the linking element 31 inside the side edge bent configuration 11 and a stable connection of the two wall modules 1 is achieved.

[0035] A length l_1 of the linking element 31 corresponds substantially to a length l_2 of the wall module 1. Hereby a stable connection of the two wall modules 1 is achieved and furthermore the linking element 31 will be provided all the way down, passing an upper edge of a floor strip to which the wall modules can be mounted as described above. Hereby a water proof mounting can be assured.

[0036] In an alternative embodiment of the invention the linking element can instead be divided into smaller linking parts, i.e. each linking part is not at all as long as the whole wall module as described above. In such embodiment a number of smaller linking parts can be used for linking two wall modules, for example one upper linking element, one lower and one in the middle.

[0037] The radius r_1 of the second side bend 13b of the wall module 1 is provided such that a side part 45a, 45b of the linking element 31 can be provided into the opening 17 between the first and third bent side parts 15a, 15c of the wall module and during the connection will be passing the third bent side part 15c which finally will lock a side part 45a, 45b of the linking element 31 within the side edge bent configuration 11 of the wall module 1 when a wall module 1 and a linking element 31 have been connected. Hereby the side part 45a, 45b of the linking element 31 will be provided between the first and second bent side parts 15a, 15b in a space 14 provided inside the third bent side part 15c.

[0038] Figures 6c and 6d show a linking element 31' according to another embodiment of the invention. Figure 6c is a top view of the linking element 31' and Figure 6d is a perspective view of the linking element 31'. The linking element 31' according to this embodiment comprises an elongated rectangular plate 33' having two linking element side edges 35a', 35b', one linking element top edge 37' and one linking element bottom edge 39'. The linking element 31' comprises two side parts 45a', 45b' having locking features 201 and a middle part 47' between said two side parts, whereby a width w_1 of the middle part 47' corresponds substantially to a width w_2 of the third bent side part 15c of the wall module 1 times two. The locking features 201 are in this embodiment of the linking element 31' provided at a suitable distance from the linking element side edges 35a', 35b' and are protrusions 201 formed in the plate for acting as locking parts. A suitable distance is chosen to correspond to the design of the side edge bent configurations 11 of the wall module 1, i.e. the protrusions 201 should be provided inside the third bent part 15c of the side edge bent configuration 11 when the linking element 31' is connecting two wall modules 1. Protrusions 201 are hereby formed along the two side edges of

the linking element 31'. The number of protrusions 201 can be varied. For example one protrusion 201 can be provided for each of the two sides of the linking element close to the linking element bottom edge 39' and one protrusion 201 can be provided for each of the two sides of the linking element close to the linking element top edge 37'. In another embodiment additional protrusions 201 can be provided with suitable spacing in between these upper and lower protrusions, such as shown in Figure 6d. In another embodiment the locking feature is instead provided as a groove extending from a plane of the plate 33'. Said groove could be provided along the whole length of the linking element.

[0039] Figures 6e and 6f show a linking element 31'' according to another embodiment of the invention. Figure 6e is a top view of the linking element 31'' and Figure 6f is a front view of the linking element 31''. The design and function correspond to the two previously described linking elements 31, 31' in relation to Figures 6a-6d. Locking features 43a', 43b' are in this embodiment provided as one extending groove along each side of the linking element 31''. The groove can be formed as a hook for improving a clamping effect inside the bent configuration 11 of the wall modules 1.

[0040] Figures 6g and 6h show a linking element 31''' according to another embodiment of the invention. Figure 6g is a top view of the linking element 31''' and Figure 6h is a front view of the linking element 31'''. The design and function correspond to the previously described linking elements. Locking elements 43a'', 43b'' are in this embodiment provided as a 90 degree bend of the plate along each side of the linking element 31'''.

[0041] Figures 6i and 6j show a linking element 31'''' according to another embodiment of the invention. Figure 6i is a top view of the linking element 31'''' and Figure 6j is a front view of the linking element 31''''. The design and function correspond to the previously described linking elements. Locking elements 43a''', 43b''' are in this embodiment provided as bends of more than 90 degrees along each side of the linking element 31''''.

[0042] Figure 7 is a top view cross section of two connected wall modules 61 according to one embodiment of the invention. In this embodiment of the invention the wall modules 61 are of sandwich type, i.e. two wall modules 1 of the type described above in relation to Figures 1-5 are mounted together possibly with isolation 63 in between. When such a sandwich type wall module 61 should be mounted to another sandwich type wall module 61 either one or two linking elements 31 as described above in relation to Figures 6a-6j can be used. In Figure 7 two linking elements 31 are used.

[0043] Figure 8 is a cross section side view of a wall module 1 according to one embodiment of the invention when the wall module 1 is connected to a floor strip 71. The wall module 1 is the same as shown in the Figures 1-5. The floor strip 71 is a strip connected to a floor 65 normally in a right angle. If the wall module 1 should be part of a wall in for example a bath room where a water proof mounting of the wall is important the floor strip 71 is mounted to the floor in a water proof way or the floor strip may be an integral part of the floor 73. If the wall module 1 should be a part of a wall in another room where water resistance not is an issue the

floor strip can be any kind of rail attached to the floor 73. In Figure 8 it can be seen that the wall module 1 is mounted to the floor strip 71 by providing the floor strip into an opening 27 provided between the first bent bottom part 25a and the third bent bottom part 25c if a third bent bottom part 25c is provided. If only a first and a second bent bottom part 125a, 125b are provided as discussed above in relation to Fig. 4b the floor strip 71 is provided into the opening provided between the first and second bent bottom parts 125a, 125b. Hereby the radius r_2 of the second bottom bend 23b; 123b should be provided such that the opening 27; 127 has a width which is about the same as a thickness of the floor strip 71. Furthermore a locking detail could be provided to the floor strip 71 at a suitable distance above the floor. No locking detail is shown in Figure 8 but such a locking detail could be suitable for improving stability of the wall module mounting to the floor strip 71. Such a locking detail could be locked within the bottom bent configuration 21 inside the third bent bottom part 25c and could be provided as an inclined edge such that the third bent bottom part 25c can slide over it when the wall module 1 is mounted to the floor strip 71.

[0044] Figure 9 is a cross section side view of a wall module 61 of sandwich type according to one embodiment of the invention when the wall module 61 is connected to a floor strip 71. The wall module is the same sandwich type as described in relation to Figure 7. The mounting to the floor list 71 is the same as described for a single wall module 1 in relation to Figure 8 and will not be described again.

[0045] Figure 10 shows five wall modules 1; 61 according to embodiments of the invention connected to each other and to a floor strip 71. When connecting wall modules according to the invention to each other around a corner as shown in Figure 10 a corner linking element can be used. Such a corner linking element is shown in Figures 11 and 12. However another possibility is to bend the wall module itself. The middle corner of Figure 10 is a bent wall module and is shown in further detail in Figure 13. The two other corners in Figure 10 use a corner linking element.

[0046] Figure 11 is a cross section top view of two wall modules 61 of sandwich type as shown in Figure 7 according to one embodiment of the invention when they are connected to each other by two corner linking elements 81a, 81b according to one embodiment of the invention. In the same way two single wall modules 1 as the ones described in relation to Figures 1-5 can be connected by one corner linking element 81.

[0047] Figures 12a and 12b show schematically a corner linking element 81; 81a, 81b according to one embodiment of the invention. The difference between the two different corner linking elements 81a, 81b as used in Figure 11 for connecting two sandwich type wall modules is only the length of the legs. Only one example is shown here in Figures 12a and 12b and is numbered as 81 but could as well be 81a or 81b. The corner linking element 81 comprises an elongated plate 83 having two corner linking element side edges 85a, 85b, one corner linking element top edge 87 and one corner linking element bottom edge 89. The corner linking element 81 comprises further a side edge bent 93a, 93b in each side edge 85a, 85b hereby providing two side parts 95a, 95b of the corner linking element 81 comprising double folded

plate and a middle part 97 of the corner linking element 81 comprising a single layer of the plate. A length l3 of said corner linking element 81 corresponds substantially to a length l2 of the wall module 1 and the radius of the second side bend 13b of the wall module is provided such that a side part 95a, 95b of the corner linking element 81 can be provided into the opening 17 between the first and third bent side parts 15a, 15c of the wall module. During the connection of the wall module to the corner linking element 81 the side part 95a, 95b of the corner linking element 81 will be passing the third bent side part 15c which finally will lock a side part 95a, 95b of the corner linking element 81 within the side edge bent configuration 11 of the wall module 1 when a wall module and a corner linking element have been connected. The middle part 97 of the corner linking element 81 comprises a 90° bend 98.

[0048] Figure 13 shows the middle corner in Figure 10. Hereby no corner linking element 81 is used. Instead the wall module 1; 61 has been bent.

REFERENCES CITED IN THE DESCRIPTION

Cited references

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Patent documents cited in the description

- [SE369090 \[0002\]](#)
- [GB599011A \[0002\]](#)

Patentkrav

1. Vægssystem omfattende mindst et vægmodul (1) og mindst et forbindelseselement (31; 31'; 31"; 31'''; 31''''), hvor nævnte vægmodul (1) omfatter en i det væsentlige rektangulær plade (3), idet nævnte rektangulære plade omfatter to sidekanter (5a, 5b), en topkant (7) og en bundkant (9), idet nævnte sidekanter (5a, 5b) hver omfatter en sidekantbøjningskonfiguration (11), hvor nævnte sidekantbøjningskonfiguration omfatter en første sidebøjning (13a), en anden sidebøjning (13b) og en tredje sidebøjning (13c), hvor alle tre sidebøjninger (13a,b,c) er i det væsentlige 180° eller 160-200° og er tilvejebragt langs forskellige bøjningslinjer, der er parallelle med sidekanterne (5a, 5b) af pladen, hvorved sidekantbøjningskonfigurationen (11) omfatter en første bøjet sidedel (15a) tilvejebragt langs sidekanten (5a, 5b) af pladen (3) mellem den første sidebøjning (13a) og den anden sidebøjning (13b), en anden bøjet sidedel (15b) tilvejebragt langs sidekanten af pladen (3) mellem den anden sidebøjning (13b) og den tredje sidebøjning (13c) og en tredje bøjet sidedel (15c) tilvejebragt langs sidekanten af pladen (3) mellem den tredje sidebøjning (13c) og en åben endeside (16) eller muligvis en fjerde bøjet sidedel af pladen (3), hvor nævnte første bøjede sidedel (15a) er tilvejebragt mellem pladen (3) og nævnte anden bøjede sidedel (15b), og hvor nævnte tredje bøjede sidedel (15c) er tilvejebragt mellem nævnte første og nævnte anden bøjede sidedel (15a, 15b), og hvilken tredje bøjede sidedel (15c) er mindre end både den første og anden bøjede sidedel (15a, 15b), hvor nævnte forbindelseselement (31; 31'; 31"; 31'''; 31'''') omfatter en langstrakt rektangulær plade (33; 33') omfattende to sidedele (45a, 45b; 45a', 45b') langs en længde af nævnte plade (33; 33') og en midterdel (47; 47') langs længden af nævnte plade mellem nævnte to sidedele, hvor nævnte to sidedele (45a, 45b; 45a', 45b') omfatter låsefunktioner (43a, 43b; 201; 43a', 43b'; 43a''; 43b''; 43a'''; 43b'''), hvor radiussen af den anden sidebøjning (13b) af vægmodulet er tilvejebragt således, at en sidedel (45a, 45b; 45a', 45b') af forbindelseselementet (31; 31'; 31"; 31'''; 31'''') kan anbringes i en åbning (17) mellem den første og tredje bøjede sidedel (15a, 15c) af vægmodulet og vil under forbindelsen passere den tredje bøjede sidedel (15c), som endelig vil låse en sidedel (45a, 45b; 45a', 45b') af forbindelseselementet (31; 31'; 31"; 31'''; 31'''') inden for sidekantbøjningskonfigurationen (11) af vægmodulet (1), når et vægmodul og et forbindelseselement er blevet forbundet, hvorved en bredde (w1)

af midterdelen (47; 47') svarer i det væsentlige til en bredde (w_2) af den tredje bøjede sidedel (15c) af vægmodulet (1) gange to.

2. Vægssystem ifølge krav 1, hvor en radius (r_1) af den anden sidebøjning (13b) er tilvejebragt således, at der er tilvejebragt en åbning (17) ind i sidekantbøjningskonfigurationen (11) mellem den første og tredje bøjede sidedel (15a, 15c) til modtagelse af et forbindelseselement.

3. Vægssystem ifølge krav 1 eller 2, hvor nævnte bundkant (9) af nævnte rektangulære plade (3) omfatter en bundkantbøjningskonfiguration (21; 121), hvor nævnte bundkantbøjningskonfiguration omfatter en første bundbøjning (23a; 123a) og en anden bundbøjning (23b; 123b), hvor den første og anden bundbøjning (23a,b; 123a,b) er i det væsentlige 180° og er tilvejebragt langs forskellige bøjningslinjer, der er parallelle med bundkanten (9) af pladen, hvorved bundkantbøjningskonfigurationen (21; 121) omfatter en første bøjet bunddel (25a; 125a) tilvejebragt langs bundkanten (9) af pladen (3) mellem den første bundbøjning (23a; 123a) og den anden bundbøjning (23b; 123b), en anden bøjet bunddel (25b; 125b) tilvejebragt langs bundkanten af pladen mellem den anden bundbøjning (23b, 123b) og enten en tredje bundbøjning (23c) eller en åben bundendeside (26; 126) af panelet, hvor den første bøjede bunddel (25a; 125a) vil være tilvejebragt mellem pladen (3) og den anden bøjede bunddel (25b; 125b).

4. Vægssystem ifølge krav 3, hvor en radius (r_2) af den anden bundbøjning (23b; 123b) er tilvejebragt således, at der er tilvejebragt en åbning (27) ind i bundkantbøjningskonfigurationen (21) mellem den første og anden bøjede bunddel (25a, 25b; 125a, 125b) til modtagelse af en gulvliste.

5. Vægssystem ifølge krav 3 eller 4, hvor nævnte bundkantbøjningskonfiguration (21) også omfatter en tredje bundbøjning (23c), der er i det væsentlige 180° og er tilvejebragt langs en bøjningslinje, som er parallel med bundkanten (9) af pladen, og herved omfatter nævnte bundkantbøjningskonfiguration (21) yderligere en tredje bøjet bunddel (25c) tilvejebragt langs bundkanten af pladen mellem den tredje bundbøjning (23c) og en åben bundendeside (26) af panelet, hvilken tredje bøjede bunddel (25c) er tilvejebragt mellem nævnte første og

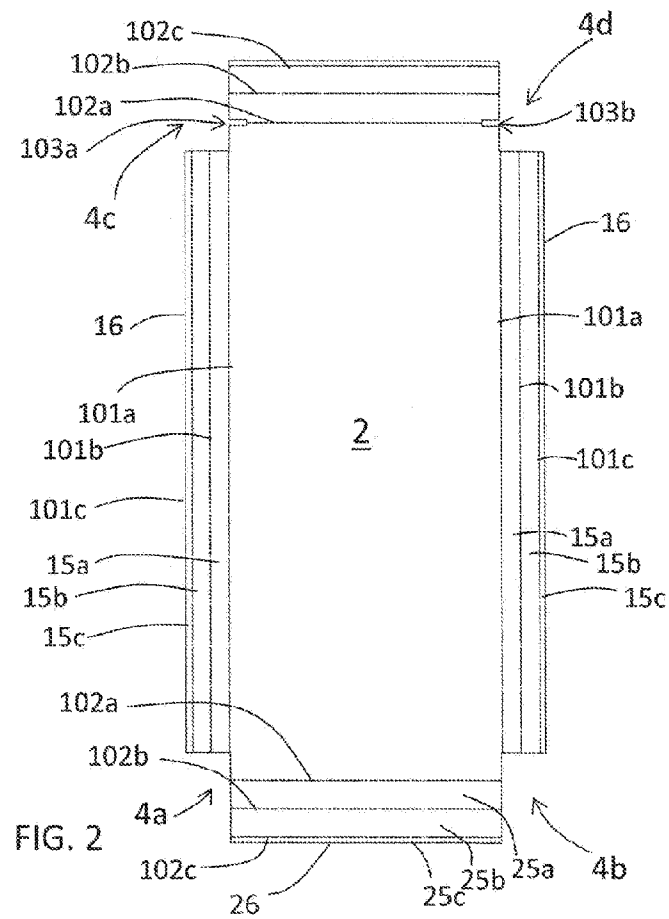
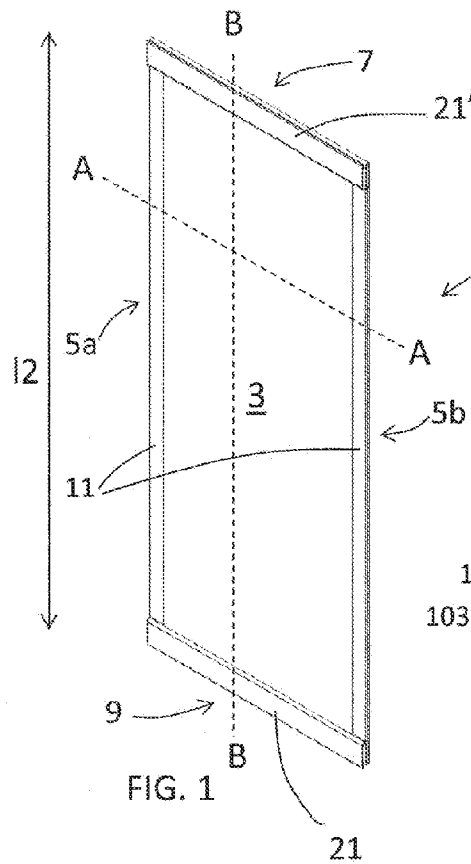
nævnte anden bøjede bunddel (25a, 25b), og hvilken tredje bøjede bunddel (25c) er mindre end både den første og den anden bøjede bunddel (25a, 25b).

- 6.** Vægssystem ifølge et hvilket som helst af kravene 3-5, hvor en radius (r_3) af den første bundbøjning (23a; 123a) er tilvejebragt således, at den første, anden og tredje bøjningssidedel (15a, 15b, 15c) af sidekanterne (5a, 5b) er tilvejebragt mellem et plan, hvori den første bøjede bunddel (25a; 125a) er tilvejebragt, og et plan, hvori en midterdel af pladen (3) er tilvejebragt.
- 10 **7.** Vægssystem ifølge et hvilket som helst af de foregående krav, hvor materialet af den rektangulære plade er metalplade.
- 8.** Vægssystem ifølge et hvilket som helst af de foregående krav, hvor nævnte låsefunktioner (43a, 43b; 201; 43a', 43b'; 43a"; 43b"; 43a'''; 43b''') strækker sig
15 fra et plan af den langstrakte rektangulære plade (33; 33') af forbindelses-elementet (31; 31'; 31"; 31'''; 31'''), hvilke låsefunktioner vil blive låst inde i sidekantbøjningskonfigurationen (11) via den tredje bøjede sidedel (15c), når et vægmodul og et forbindelseselement er blevet forbundet.
- 20 **9.** Vægssystem ifølge et hvilket som helst af de foregående krav, hvor en længde (l1) af nævnte forbindelseselement (31; 31'; 31"; 31'''; 31''') i det væsentlige svarer til en længde (l2) af vægmodulet (1).
- 10.** Vægssystem ifølge et hvilket som helst af de foregående krav, hvor nævnte
25 låsefunktioner (43a, 43b) er dobbeltfoldninger af pladen (33) langs dens sidekanter (35a, 35b), hvorved der tilvejebringes to sidedele (45a, 45b) af forbindelseselementet (31) omfattende dobbeltfoldet plade og en midterdel (47) af forbindelseselementet (31) omfattende et enkelt lag af pladen.
- 30 **11.** Vægssystem ifølge et hvilket som helst af de foregående krav, hvor vægsystemet yderligere omfatter et hjørneforbindelseselement (81), idet nævnte hjørneforbindelseselement omfatter en langstrakt plade (83) med to hjørneforbindelseselementsiderkanter (85a, 85b), en hjørneforbindelseselement-topkant (87) og en hjørneforbindelseselementbundkant (89), idet nævnte
35 hjørneforbindelseselementet (81) yderligere omfatter en sidekantbøjning (93a,

93b) i hver sidekant 85a, 85b) og tilvejebringer herved to sidedele (95a, 95b) af hjørneforbindelseselementet (81) omfattende dobbeltfoldet plade og en midterdel (97) af hjørneforbindelseselementet (81) omfattende et enkelt lag af pladen, hvor en længde (l3) af nævnte hjørneforbindelseselement (81) svarer i det væsentlige til en længde (l2) af vægmodulet (1), og hvor radiussen af den anden sidebøjning (13b) af vægmodulet er tilvejebragt således, at en sidedel (95a, 95b) af hjørneforbindelseselementet (81) kan anbringes i åbningen mellem den første og anden bøjede sidedel (15a, 15b) af vægmodulet og vil under forbindelsen passere den tredje bøjede sidedel (15c), som til sidst vil låse en sidedel (95a, 95b) af hjørneforbindelseselementet (81) inden i vægmodulet, når et vægmodul og et hjørneforbindelseselement er blevet forbundet, hvorved nævnte midterdel (97) af hjørneforbindelseselementet omfatter en i det væsentlige 90° bøjning (98).

12. Vægsegment omfattende et vægssystem ifølge et hvilket som helst af de foregående krav omfattende mindst to vægmoduler og mindst et forbindelseselement (31; 31'), der forbinder de to vægmoduler.

DRAWINGS



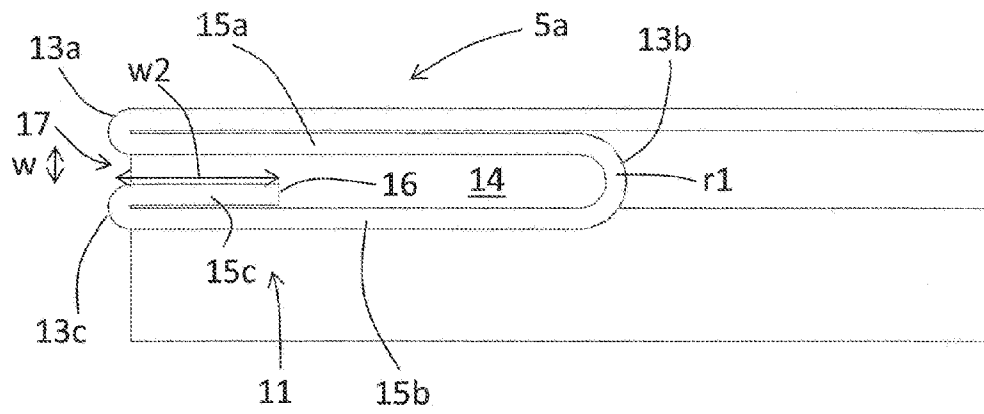


FIG. 3a

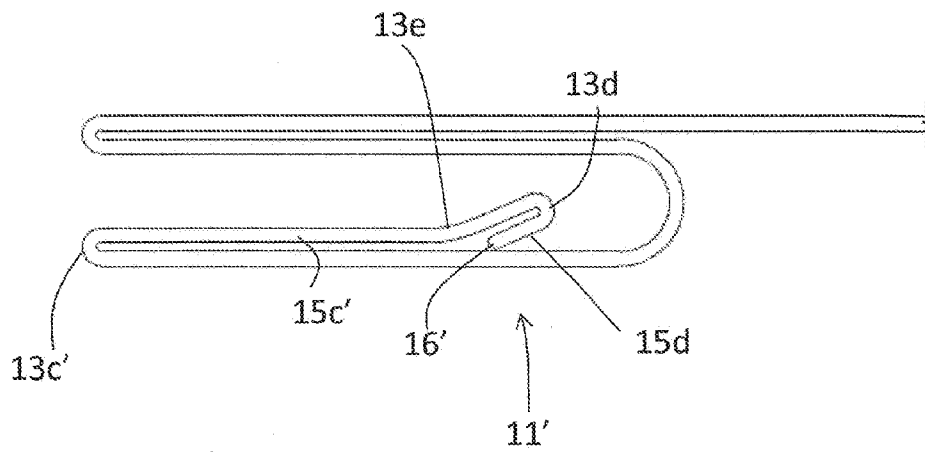
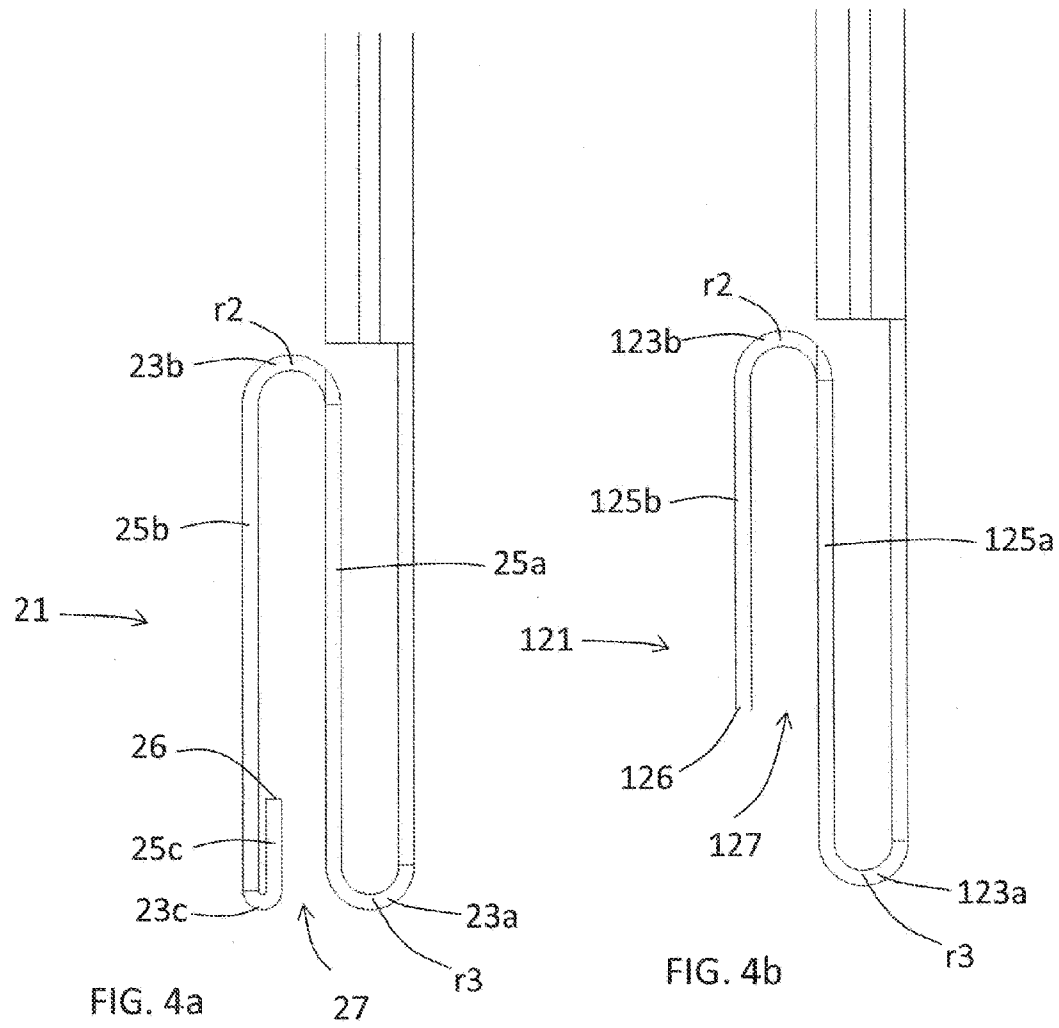


FIG. 3b



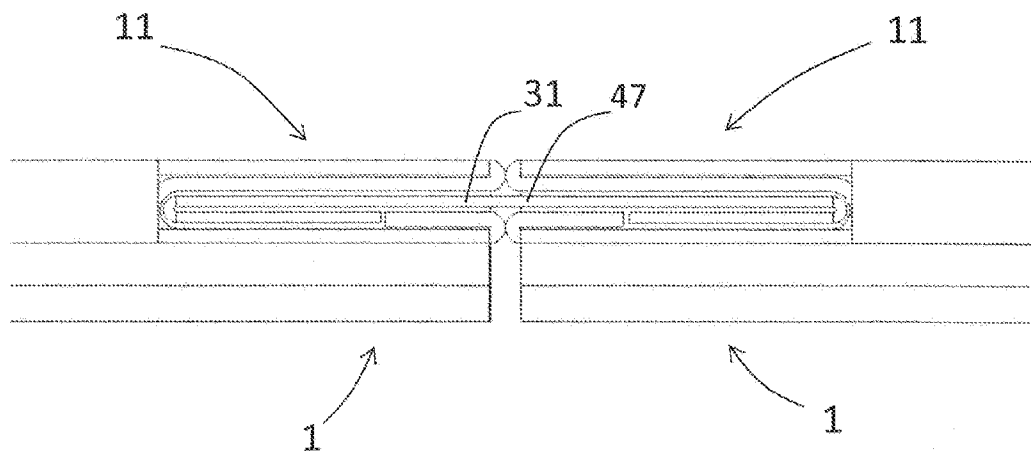
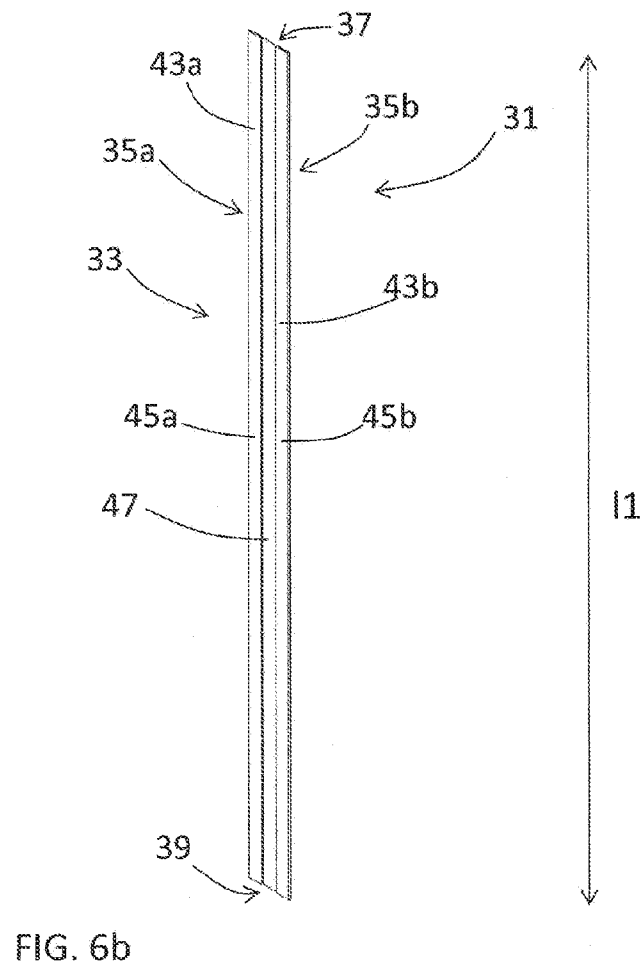
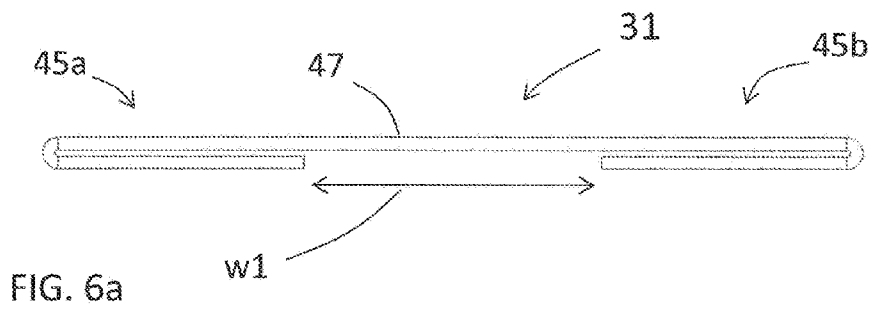


FIG. 5



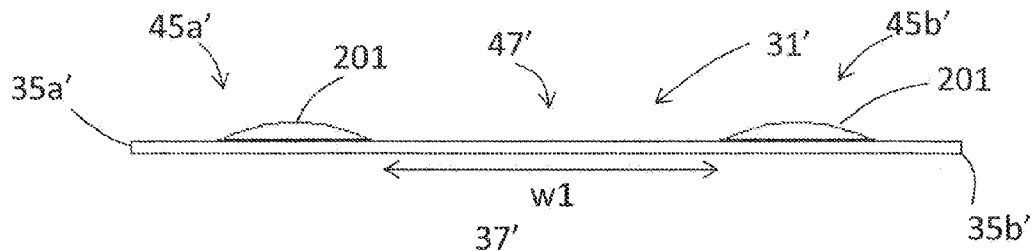


FIG. 6c

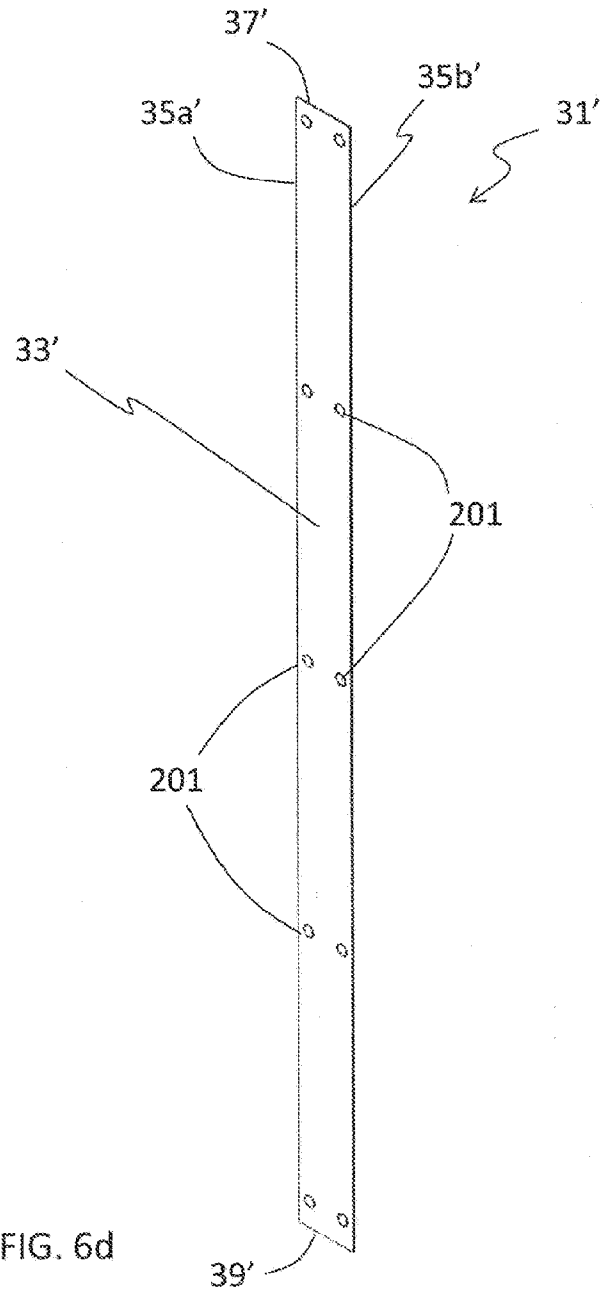


FIG. 6d



FIG. 6e

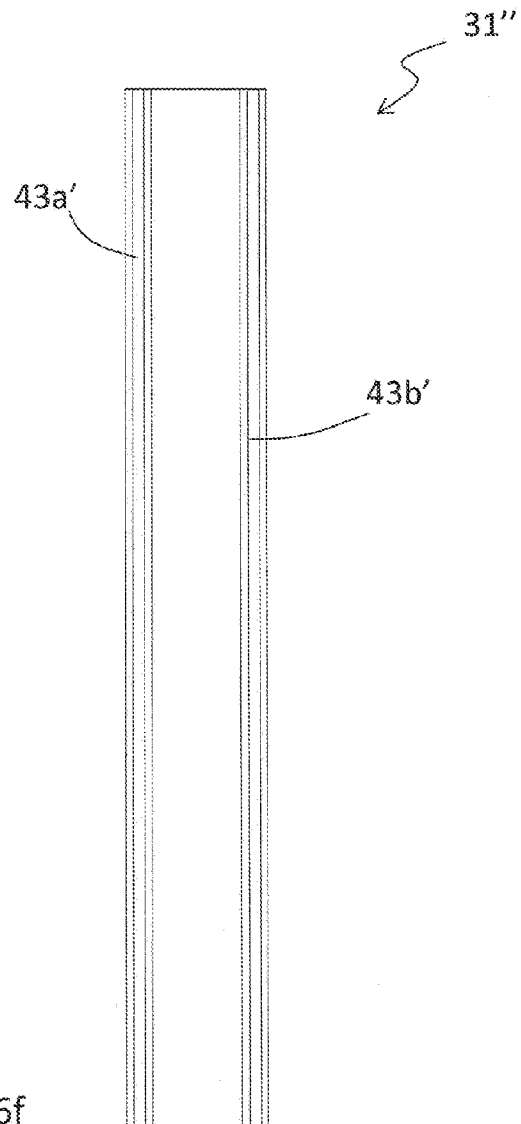


FIG. 6f



FIG. 6g

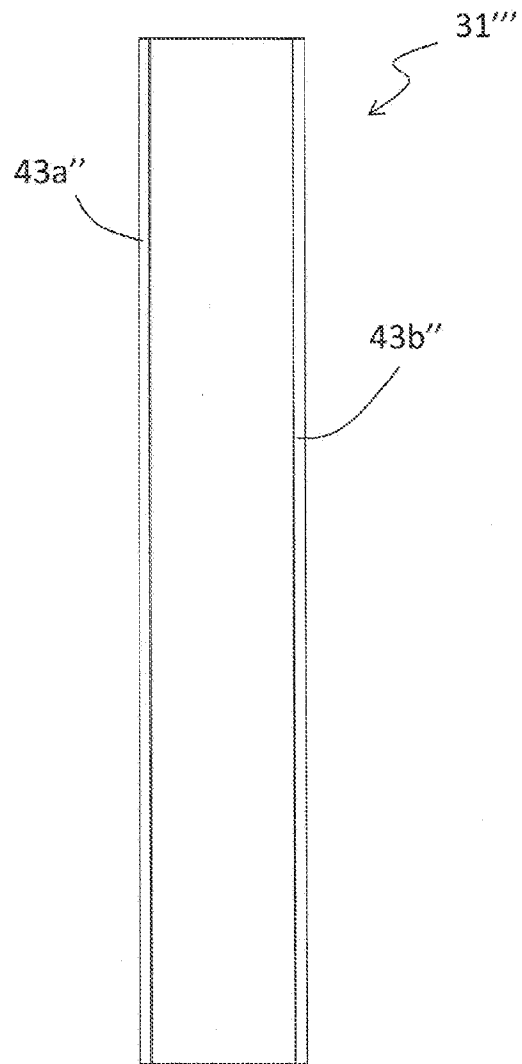


FIG. 6h

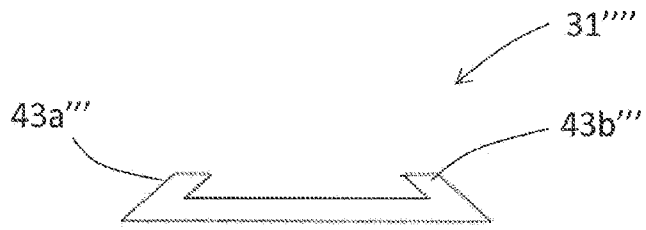


FIG. 6i

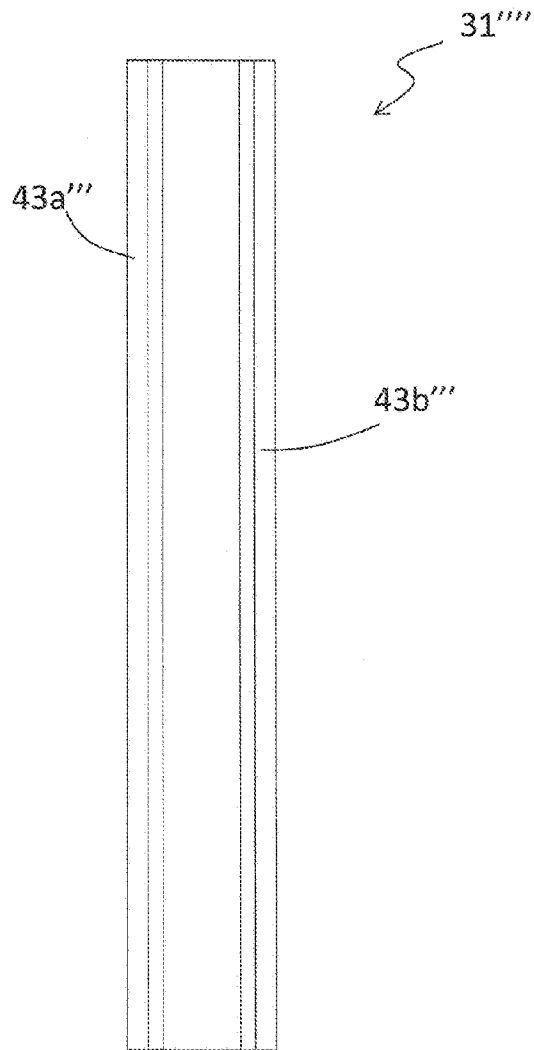
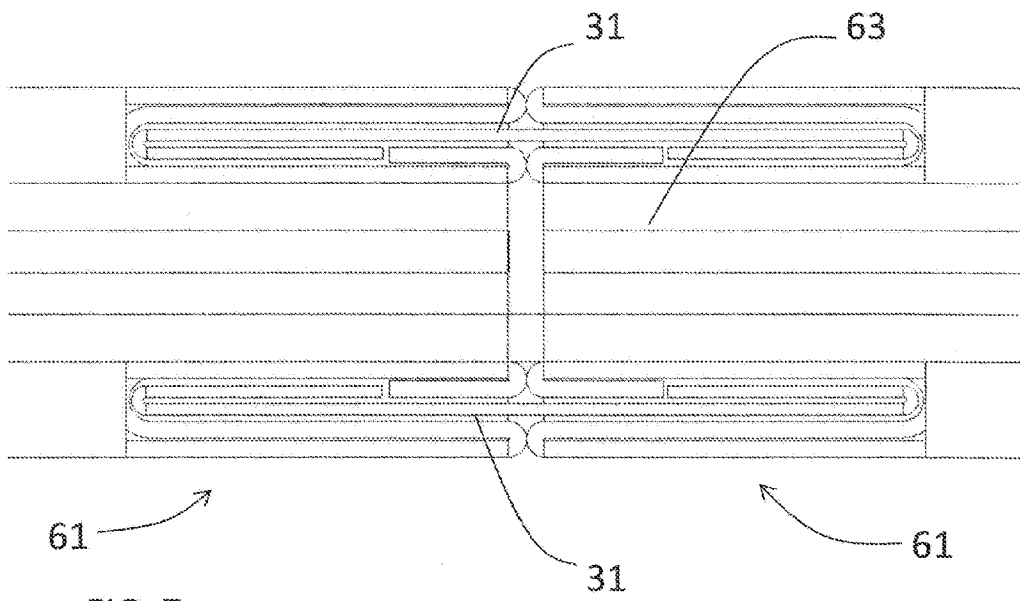


FIG. 6j



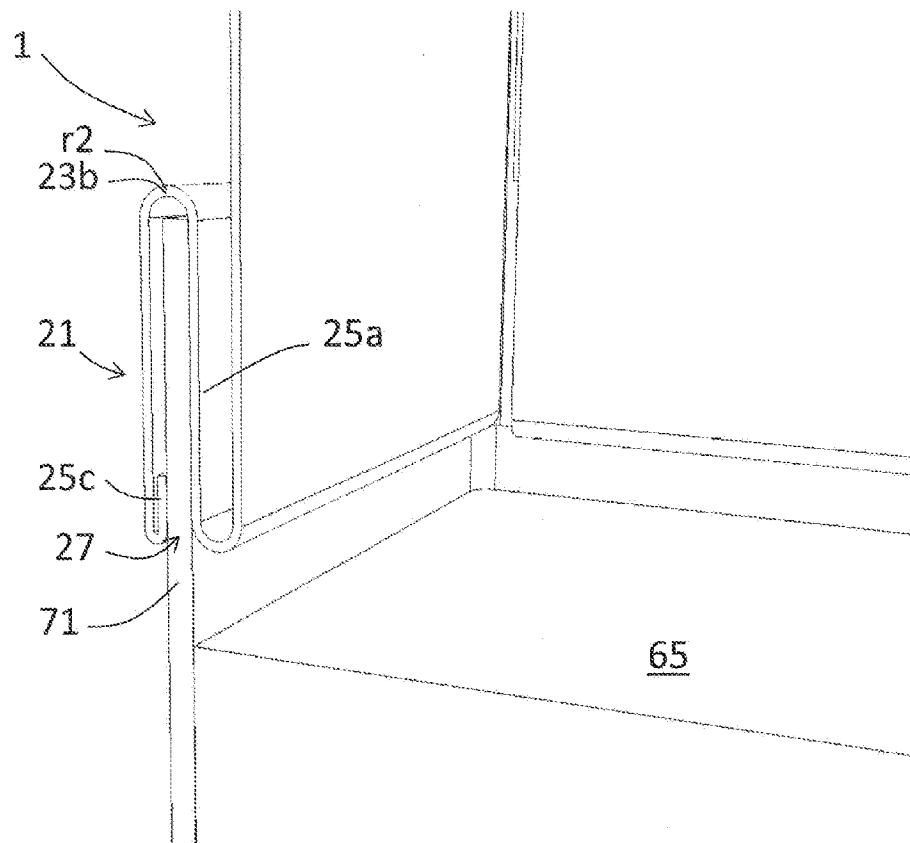


FIG. 8

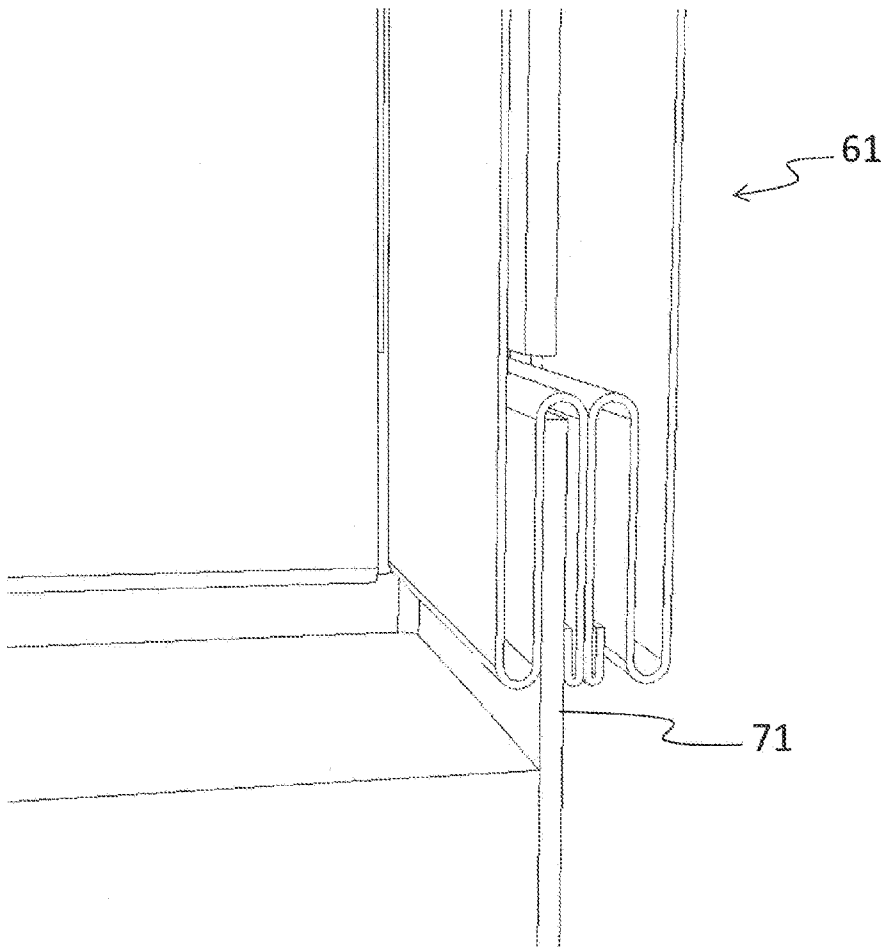


FIG. 9

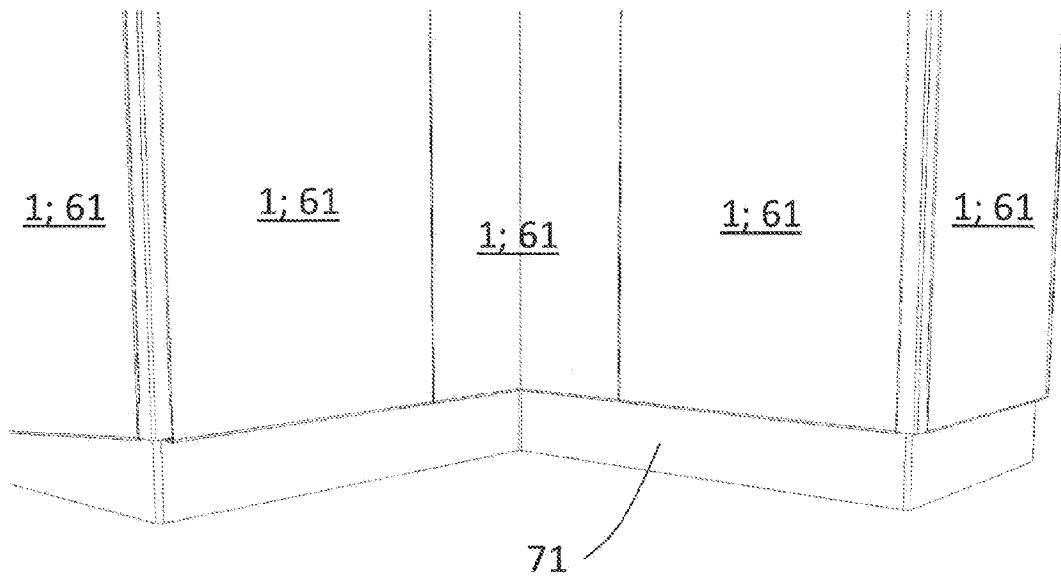


FIG. 10

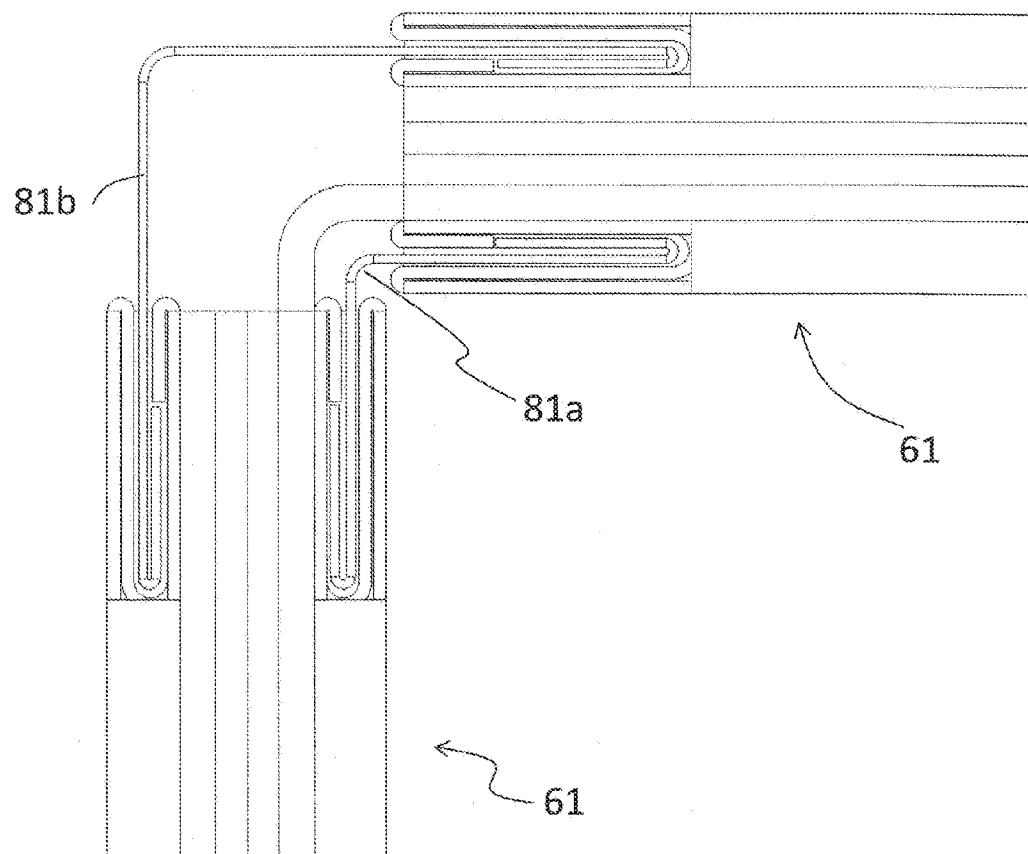
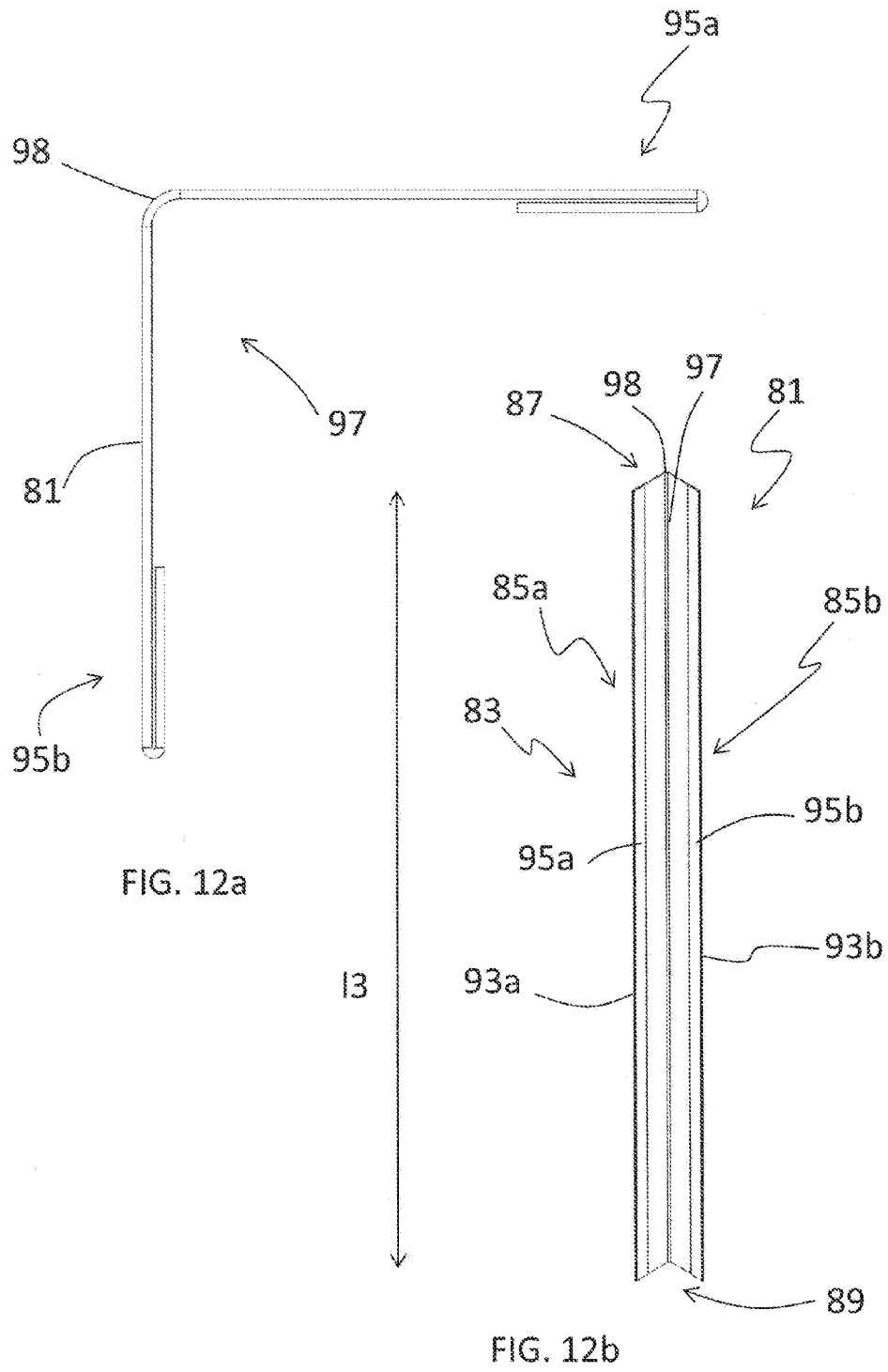


FIG. 11



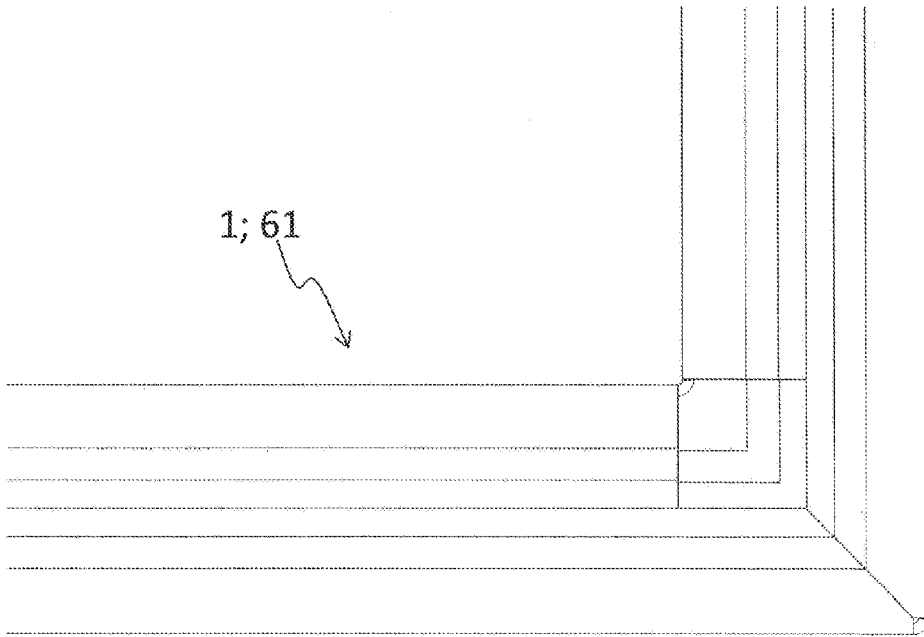


FIG. 13