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(54) **Intrusion prevention upright and enclosure**

Zaunpfosten und Umzäunung zur Einbruchsvermeidung

Poteau et clôture anti-intrusion

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Description

[0001] The present invention relates to an upright for fixed intrusion prevention fencing and to a correlated fixed intrusion prevention fencing.

[0002] A fixed intrusion prevention fencing is known, to prevent unskilled persons from entering dangerous areas or those without permission from entering unauthorized areas.

[0003] A fixed intrusion prevention fencing of this kind is formed of a plurality of panels supported by uprights, which are fastened to the ground. Each panel is fastened to a pair of uprights; each panel-upright assembly normally comprises at least one upper fastening point and one lower fastening point.

[0004] According to current regulations, the lower fastening point must be placed at a height of at least 120 mm from the ground.

[0005] Moreover, these regulations also establish that that in the case of the upper fastening being missing, the intrusion prevention panel must not remain in position, but fall as a result of the force of gravity: in this way, during assembly operations of the fixed intrusion prevention fencing, the risk of omitting the upper fastening of the panels to the uprights is avoided.

[0006] Also, a reduction in the number of parts is generally required, as the use of a large number of components can lead to their loss and therefore cause the risk of installation of a fixed fencing being delayed.

[0007] Furthermore, it is disadvantageous to use perimeter holes produced both on the uprights and on the panels or in any case lateral couplings between uprights and panels, as these form preferred rupture points as a result of external stresses on the panels, acting in a horizontal direction. Moreover, there are known fixed intrusion prevention fencings comprising uprights equipped with fastening means and panels equipped with fastening means complementary to said fastening means, described for example in WO 03/106788 A1 and EP 0835974 A1. It would be preferable to be able to produce intrusion prevention fencings without the need to use specific panels, but using standard panels without specific complementary fastening means.

[0008] EP 1 167 658 B1 describes a fixed intrusion prevention fencing, and in particular an upright having a lower ring and an upper ring that are inserted over said upright so as to respectively produce the lower and upper fastening points.

[0009] US 2006/0150546 A1 describes a fixed intrusion prevention fencing, and in particular an upright having a lower ring and an upper ring that are inserted over said upright to respectively produce the lower and upper fastening points. In this case, the lower fastening point supports the panel in an area with a stepped profile so as to allow the panel to fall according to a preferred direction in the case of the upper fastening being missing.

[0010] Although advantageous from numerous points of view, these solutions nonetheless have some drawbacks.

[0011] In fact, in order to assemble the fixed intrusion prevention fencing, it is necessary to insert the upper ring and the lower ring. This causes difficulty during assembly, as the lower ring must firstly be inserted over the upright and positioned at the correct height, then a relative panel must be fitted to the lower fastening point of the upright, the upper ring inserted over the upright until the panel and upper ring correspond. Therefore, various difficulties must be overcome, as a panel must be fastened at the same height to two uprights: if adequate care is not taken, a same panel can be fastened to the two uprights at different heights, with negative consequences on the structure.

[0012] Also, insertion of the upper ring and lower ring over the upright makes it necessary to ensure the upper and lower rings do not slip off due to the weight of the panels: this causes an oversizing of the clamping elements which it would be desirable to avoid.

[0013] Furthermore, the upper and lower rings are also elements that can be lost, and also require threaded elements for their fastening to the upright.

[0014] Finally: the rings are mechanically fastened according to a clamping method with the aid of small screws, the purpose of which is to ensure the position of said upper and lower rings also in the case of vibrations or accidental contact: these small screws are a nuisance during assembly and are also easily lost.

[0015] GB 1 438 813 describes an interlocking frame construction comprising a plurality of spaced-apart posts and upper and lower rails secured to the posts by connector means. Each rail is formed by several components. The upper rail has side portions (37) that extend upwardly to engage a channel cover (52) by horizontally sliding the cover onto the rail. A connector assembly (39) is provided to secure two upper rails to a post (12). Said connector assembly comprises two hangers (41) and a wedge (47) provided with two parallel spring walls (49) to be forced into the hollow end of the post between the hangers. Each hanger has an outwardly extending tongue engaging the end of each rail. Such construction is of a rather complex structure and requires an accurate and time consuming and mounting operation.

[0016] FR 2 741 648 describes a device for mounting and fixing a barrier element formed by panels and vertical posts. Two adjacent panels are mounted to a post by means of upper and lower connection means comprising pins (21, 22, 23) to be inserted into the hollow ends of tubular elements (6) which are part of the panels. Such construction is rather complex and expensive, particularly, with respect to the lower connection means rests on a ring (15).

[0017] US 910 459 describes a fence in which the fence rail 2 and 3 may be secured to the post 5 by providing either the post or the rail with a projection adapted to engage a part of the other member.

[0018] US 4 794 744 describes a wall construction for modular woven wire partition. It is disclosed that each

support post 10 comprises an hollow box beam with a front mounting surface 30 and with side surface 32. Each front mounting surface 30 and similar openings 36' are provided at the uppermost ends of the support posts. The upper end of each support post 10 is closed off by insert 64 welded in place.

[0019] GB 599 042 describes improvements in fencing. In this solution, the post 24 are of tubular form and are flanged at their lower ends 25, which are set into the pavement. The top of the tubular post 24 are recessed at 26 at opposite sides, each recess being of semicircular shape. The adjacent ends of two sections of the top rail are seated in the recess and retained in the position by a cap 28 having flanges 29 which engage the top of the top 24 and form a closure thereof. The cap also is provided with a pair of depending cheeks 30 which extend down into the top of the post and are secured thereto by tapered pegs 31 driven in through opening form the outside of the post.

[0020] These solutions, also, have some drawbacks in particular due to the complexity of the connections and the high numbers of adjustment necessary to implement what is described. Moreover, these solutions have a complex structure and require an accurate and time consuming mounting operation, like welding for US 4 794 744.

[0021] The aim of the present invention is to solve the drawbacks of prior art.

[0022] In accordance with the invention, this problem is solved by an upright for fixed intrusion prevention fencing of the type with uprights and panels,
said upright having a vertically elongated body with an upper opening and each of said panels having an upper opening, said upright comprising:

- lower fastening means to support at least one of said panels;
- upper fastening means to retain at least one of said panels in place and comprising a retaining component having a retaining protrusion operatively facing downwards, so that it can be inserted into said upper panel opening to perform a retaining action on said at least one panel; said upper fastening means being coupled to said upper upright opening, characterized in that:

    - said upper fastening means comprise a cap element made of elastically expandable material operatively inserted into said upper upright opening;
    - said retaining component is a plate element formed with said retaining protrusion operatively facing downwards, said plate element being operatively mounted onto said cap element and being fastened to said cap element by means of a threaded connection of the screw/bushing type;

    whereby said cap element is expanded within said upper opening to effect fastening of said uprights and said panels.

[0023] In this way, the panel is supported stably when the retaining component is fitted, while the panel instead tilts in the absence of the retaining component, all without requiring to insert ring components over the elongated body of the upright or to perform adjustments during assembly of a fixed intrusion prevention fencing.
The retaining protrusion adapted to be facing downward, can be inserted into the relative upper panel opening so as to perform a retaining action on said at least one panel. In this way, the retaining protrusion can be inserted into a panel cavity. This panel cavity is preferably the cavity of a tubular element of the panel, located vertically on the side and being part of the frame of the panel: it is an element already found in many conventional panels, but in the intrusion prevention fencing according to the present invention this element has the new task of allowing retention of the panel without the use of specific retaining means complementary to the upper fastening means of the panel, such as specially shaped rails and rail covers.

[0024] Preferably, the upper fastening means comprise a cap element capable of being inserted into said upper upright opening so that it can be coupled to said retaining component. This cap element is made of elastic material, such as PVC, and can be inserted axially in the manner of a gasket into said upper upright opening. This cap element allows a plurality of effects to be obtained with a single object. In fact, the cap element allows coupling of the retaining component to the upright without the use of lateral holes, as it is inserted into the upper upright opening. This upper opening is normally present in the uprights and therefore insertion of the cap element makes use of this presence without requiring further coupling components. Moreover, the fact that the cap element is made of plastic material allows an absorbing effect to be obtained, as external stresses on the panel are released on this cap element.

[0025] Preferably, the retaining component is a plate element incorporating said at least one retaining protrusion, and can be fitted to cover the cap element. The inventor has in fact noted that the use of a particularly large body is generally not required to retain the panel, but that a relative thin body is sufficient.

[0026] Preferably, the plate element is fastened to the cap element by means of a threaded connection of the screw/bushing type.

[0027] Preferably, the lower fastening means comprise a projecting tab adapted to be coupled to a panel cavity. In this way, the need for separate components to support the panel is eliminated. Moreover, it is no longer necessary to adjust the height of these lower fastening means, in accordance with the requirements of current regulations. In particular, the projecting tab is incorporated integrally with said elongated body.

[0028] Preferably, the elongated body is of the hollow

tubular type, essentially prismatic with four faces, in which said upper and lower fastening means are repeated equally on said faces.

[0029] Moreover, there is described a fixed intrusion prevention fencing comprising a plurality of panels alternated with uprights in succession such that: at least one of said uprights is according to the invention; at least one of said panels has one panel side capable of being supported by said at least one of said uprights by means of said lower fastening means and has an upper panel opening capable of being retained by said upper fastening means.

[0030] Further characteristics and advantages of the present invention will be more apparent from the description of preferred, but not exclusive, embodiments of the present invention, shown by way of example in the accompanying drawings, wherein:

- Fig. 1 shows a partial exploded perspective view of a first embodiment of an upright according to the present invention;
- Fig. 2 shows an enlargement of an upper part of Fig. 1;
- Figs. 3A-3E show a top plan view of different embodiments of a component of the upright of Fig. 1;
- Fig. 4 shows an enlarged perspective view of the lower part of a second embodiment of an upright according to the present invention;
- Figs. 5a-5c show partial top views of a fixed intrusion prevention fencing according to the present invention comprising a plurality of panels according to Fig. 1;
- Fig. 6 shows a side view of the upright of Fig. 6 illustrating the falling of a panel fixed to the upright at the bottom but not at the top;
- Fig. 7 shows a partial exploded perspective view of a third embodiment of an upright according to the present invention;

[0031] With reference to Figs. 1-5c, there is described an upright 1 according to the present invention and a fixed intrusion prevention fencing 2 of the type with uprights and panels comprising a plurality of uprights 1 alternated with panels 5. The uprights 1 and the panels 5 are in origin separated and can be fastened to each other in a removable manner.

[0032] Each of these panels 5 is of known type and comprises an outer grid 18 made of metal material of the type with rectangular mesh, capable of preventing entry by man. Said outer grid 18 is retained by a frame 19, essentially rectangular in shape, also made of metal material. The frame 19 comprises a pair of vertical panel sides 17, each of which is adapted to be fastened to an upright such as the upright 1. In particular, a panel cavity 9 stretching from the upper end to the lower end of said panel side 17 is provided, so that this panel cavity 9 has an upper panel opening 9a and a lower panel opening 9b. In variants of embodiment, this through cavity could be replaced by a blind upper cavity and by a blind lower cavity.

[0033] The upright 1 has an upward facing vertically elongated body 3, made of metal material. This elongated body 3 is structurally capable of supporting the upright 1.

[0034] The elongated body 3 is connected to the ground by means of ground connection means 20 of known type, consisting of a plate 20a provided with holes for housing, for examples, screw anchors to be fixed to the ground, ground 220. In this embodiment plate 20a is a pedestal that is integral with the elongated body 3.

[0035] Fig. 4 shows a different embodiment of the means of ground connection of upright 1. In such case, a two-parts upright cover 21 is provided, adapted to vertically house the lower end of the elongated body 3, and comprising a horizontal base 22 that can be fastened to the ground by means of threaded connection. A portion 21a is mounted on the side of the body 3 opposed to the side to which cover 21 and the two parts are fastened by a screw connection to embrace body 3.

[0036] This elongated body 3 is of the tubular type, essentially prismatic, with four upright sides 16. The elongated body 3 extends according to a vertical axis H and has an upright cavity 10 of through and axial type; this upright cavity 10 is prismatic. This upright cavity 10 is open at the top by means of an upper upright opening 10a, facing upward.

[0037] The upright 1 comprises lower fastening means 4 to support the panel 5 of the fixed intrusion prevention fencing 2.

[0038] These lower fastening means 4 comprise four projecting tabs 15, each of which is incorporated in a respective upright face 16. Each projecting tab 15 projects upward, according to an essentially oblique plane, and is tapered at the top. Each projecting tab 15 is of the same thickness as the respective upright face 16. This is because each projecting tab 15 is formed by the respective upright face 16 by punching, which offers advantageous simplification of fabrication of the upright 1.

[0039] Each projecting tab 15 has a width of between 40% and 50% of the width of the face 16 of the body.

[0040] Each projecting tab 15 is adapted to be inserted into a lower panel opening 9b of the cavity 9 of one panel side 17. It is noted that the fact that the projecting tab 15 is oblique is adapted to facilitate insertion of the panel 5 during operations to assemble the fixed intrusion prevention fencing 2: in fact, this facilitates sliding of the sheet of the panel side 17 of the panel in a chute-like manner towards the base of the projecting tab 15.

[0041] The upright 1 also comprises upper fastening means 6 to retain the panel 5 in position.

[0042] These upper fastening means 6 comprise a retaining component 7, which in the present case is essentially configured as a plate element 7a, in the present case with laminar thickness; said plate element 7a is placed on the upright 1 in horizontal position; said plate element is essentially square so as to comply with the

axial section of the elongated body 3 (other embodiments could have another shape, such as rectangular), with four sides 7b. This retaining component 7 has retaining protrusions 8 respectively incorporated with said sides 7b. A through hole 7c centered on said axis H is provided at the centre of said plate element 7a. From a dimensional point of view, the width of each retaining protrusion 8 is between 40% and 50% of the dimension of the corresponding side 7b.

[0043] Each of these retaining protrusions 8 is essentially directed vertically, so as to be facing downward, and is adapted to be inserted into the relative upper panel opening 9a. Each of said retaining protrusions 8 is of laminar type with the end bent upwards.

[0044] According to the invention, the upper fastening means 6 also comprise a cap element 11 capable of being inserted into the upper upright opening 10a. This cap element is made of elastic material, in particular PVC, and has a size slightly lower than that of the upper upright opening 10a, so that can be inserted axially into the upper upright opening 10a. In particular, this cap element 11 has a cylindrical shape that has a diameter slightly lower than the section of the upper upright opening 10a, so as to be easily inserted it into the upper upright opening 10a, also thanks to the elastic property of the elastic material of which the cap element 11 is made, which allows some deformation

[0045] The cap element 11 comprises a hole 13 of the through type. This hole 13 is coaxial to the axis H and is capable of receiving a screw 14. An internally treaded bushing 12, made of brass, is provided to engage the screw 14, as explained below.

[0046] The upper fastening means 6 comprises also a plate 11a provided with a hole 13a capable of receiving the screw 14.

[0047] Assembly of the various components of connection means is performed as follows. The cap element 11 is placed under the plate element 7a. In turn, the plate 11a is placed under the cap element 11 and the bushing 12 is placed under the plate 11a, so that a connection is possible between the bushing 12, positioned under the hole 13a of the plate element 11a so as to allow threaded connection of the screw/bushing type, by means of the screw 14 (in the present case of non conventional type and requiring a special key for the tightening/loosening operations). This screw 14 is threaded externally and is capable of being placed axially inside both the hole 7c, 13 and the hole 13a, so as to ensure that by screwing to bushing 12 an expansion of the cap element 11 between plates 7a and 11a and within the upright opening 10a is achieved. Such expansion causes a tight positioning of cap element 11 and of the entire upper fastening means 6 to upright 1m including a connection of the retaining component 7. A washer 14 may be positioned between the head of screw 14 and the retaining component 7.

[0048] It is now described how a pair of uprights such as the upright 1 operate so as to support the panel 5.

[0049] Each upright 1 is fitted to a relative panel side 17 of the panel 5. By means of the lower fastening means 4, each upright 1 supports a part of the weight of the panel 5. It is noted that this is obtained by means of the support obtained by the projecting tabs 15 inserted into the lower panel openings 9b of the two panel cavities 9 of the panel 5. The line 6b indicates correspondence between said panel opening 9b and the projecting tab 15.

[0050] Moreover, by means of the upper fastening means 6, the uprights 1 cooperate so as to retain the panel 5 in vertical position. In fact, each upright 1 is such that a respective retaining protrusion 8 is inserted into the upper panel opening 9a of the panel cavity 9 relative to the corresponding panel side 17, so as to block the panel 5. In fact, an external stress exerted on the panel 5 in horizontal direction is opposed by the presence of the pair of retaining protrusions 8 inside the panel cavity 9, so as to prevent the panel 5 from tilting.

[0051] It is noted that, advantageously, this retention is particularly stable as there are no horizontal fastenings, which could represent preferred rupture points of the panel-upright structure.

[0052] Moreover, advantageously, the external stresses acting in horizontal direction on the panel 5 are absorbed by the cap element 11 due to its elastic properties, which allow reversible deformation of the cap element 11 to oppose the external stresses.

[0053] It is noted that in this way the height of the panel is necessarily defined by the position of the projecting tabs 15 and therefore it is unnecessary to make any adjustments in height and it is not possible to set an incorrect height.

[0054] Advantageously, moreover, the fact that the upper fastening means 6 are coupled to the upright cavity 10 and project from above into the panel cavity 9 allows simplification of assembly operations, as it is sufficient to insert the upper fastening means 6 from above, making them easy to fit.

[0055] Above all, this feature ensures that simply by removing the retaining components 7 of the uprights 1 that support the same panel 5, the position of said panel 5 becomes unstable until it tilts about the respective projecting tab 15. The tapering of this projecting tab 15 is such as to facilitate this tilting.

[0056] It is also noted that accidental detachment of this retaining component 7 is prevented, both due to the presence of the screw/bushing coupling and due to the presence of the cap element 11, which - in its expanded state - offers resistance to removal from the cavity of the elongated body 3 of the upright 1.

[0057] Assembly of the panel 5 on a pair of uprights 1 is achieved by the following steps:

- pre-assembling the upper fastening means 6 by means of: inserting the screw 14 into washer 14a, then into the hole 7c of the retaining component 7, then into the hole 13 of the cap element 11, then into the hole 13a of plate 11a and eventually into bushing 12;

- inserting the pre-assembled fastening means 6 before tightening the screw into each upper upright opening 10 of each upright 1;
- installing the uprights 1 in vertical position with connection of the elongated body 3 to the ground by means of the ground connection means 20;
- fitting the panel 5 in vertical position so that each upright 1 has a projecting tab 15 inserted into the panel cavities 9a, so as to support the panel 5;
- maintaining the panel 5 in vertical position in an controlled manner, positioning a retaining component 7 so that each retaining component 7 has a retaining protuberance 8 inserted into the respective panel cavity 9a;
- continuing to maintain the panel 5 in vertical position in a controlled manner, then tightening the screw in order to fasten the screw 14 to each bushing 12, so that the retaining components 7 are fastened to said cap elements 11;
- at this point the panel 5 is supported stably by the uprights 1.

[0058] It is noted that the uprights 1 are capable of supporting the panel 5 stably when the upper fastening means 6 are fitted, while the panel 5 is instead caused to tilt when the upper fastening means 6 are not fitted.

[0059] It is noted that the retaining component 7 has the end bent to form lips 8a that are facing upward, and essentially laminar. In this way, the upright 1 is also capable of supporting a different type of panel, of the type with no frame, in which the retaining protrusions 8 have lips 8a are capable of being inserted between the links of the panel with no frame so as to support said panel with no frame. In this way, the upright 1 is advantageously susceptible to alternative uses with respect to those described above.

Preferably the hole 7c of the retaining component 7 comprises a slotted hole, i.e. of elongated type. Such slotted hole 7c is centered on the axis H so as to allow off-centered lifting of one of the sides 7b of the retaining component 7 in order to simplify assembly of the fixed intrusion prevention fencing.

[0060] Figs. 3A-3E show various embodiments of retaining component 7, in which:

Figs. 3A shows a retaining component 7 having two opposite retaining protrusions 8, suitable to connect two coplanar panels 5 to an upright 1;

Figs. 3B shows a retaining component 7 having only one retaining protrusions 8, suitable as terminal element of an intrusion prevention fencing;

Figs. 3C shows a retaining component 7 having two retaining protrusions 8 oriented at an angle of 90°, suitable to connect perpendicularly two panels 5 to an upright 1;

Figs. 3D shows a retaining component 7 having three retaining protrusions 8 at three sides thereof, suitable to connect three panels 5 to an upright 1;

Figs. 3E shows a retaining component 7 having four retaining protrusions 8 at each side thereof, suitable to connect four panels 5 to an upright 1.

Figs. 5a-5c show partial top views of a fixed intrusion prevention fencing with panels and uprights of the type described above.

[0061] In particular, in Fig. 5a it can be seen how each upright 1 can be connected to two, three or four respective panels 5 by means of upright sides 16. In this way it is also possible to make right angled bends in the fixed intrusion prevention fencing 2.

[0062] The fixed intrusion prevention fencing 2 is completed by the optional presence of hinge elements 400 (Fig. 5B) capable of imparting an oblique bend to the fixed intrusion prevention fencing 2 producing an inclined connection between two consecutive panels 5. Said hinge elements 400 are engaged with the fastening means of the uprights 1 and are capable of supporting and retaining the panels 5 in a similar manner to the uprights 1.

[0063] Movable hinge elements 500 (Fig. 5C) can be provided, capable of allowing a door 505 to be installed in a panel, i.e. capable of rotating freely about a vertical axis to achieve for example a position 505a.

[0064] With reference to Figs. 6-8, these show a second embodiment of an upright 201 according to the invention, in which elements equivalent to the elements of the preceding embodiment are indicated with the same reference number with the addition of 200.

[0065] Fig. 6 shows tilting of the panel 5 when the upper fastening means are disconnected.

[0066] Fig. 7 shows another embodiment of an upright 301 according to the invention, in which elements equivalent to the elements of the preceding embodiment are indicated with the same reference number with the addition of 300.

[0067] This upright 301 has the same upper fastening means as the first embodiment.

[0068] Instead, the upright 301 has a pedestal 320 of the tubular type with axial cavity capable of allowing insertion of the elongated body 303 and fastening of the elongated body 303 to the pedestal 320 by means of threaded connection. The pedestal 320 comprises a horizontal base 322 that can be fastened to the ground by means of threaded connection.

[0069] A feature of this third embodiment lies in the fact that the lower fastening means 304 are formed by projecting tabs 315 that are integral parts of said pedestal 320. Moreover, the projecting tabs 315 extend essentially vertically. According to an alternative embodiment, not shown, such tabs are inclined with respect to the vertical body 3, as in the embodiments of Figs. 1 and 4.

Claims

1. An upright (1) for fixed intrusion prevention fencing

(2) of the type with uprights and panels (5), said upright (1) having a vertically elongated body (3) with an upper opening (10a) and each of said panels (5) having an upper opening (9a), said upright (1) comprising:

- lower fastening means (4) to support at least one of said panels (5);
- upper fastening means (6) to retain at least one of said panels (5) in place and comprising a retaining component (7) having a retaining protrusion (8) operatively facing downwards, so that it can be inserted into said upper panel opening (9a) to perform a retaining action on said at least one panel (5); said upper fastening means (6) being coupled to said upper upright opening (10a);

characterized in that:

- said upper fastening means (6) comprise a cap element (11) made of elastically expandable material operatively inserted into said upper upright opening (10a);
- said retaining component (7) is a plate element formed with said retaining protrusion (8) operatively facing downwards (11), said plate element (7) being operatively mounted onto said cap element (11) and being fastened to said cap element (11) by means of a threaded connection of the screw/bushing type, whereby said cap element (11) is expanded within said upper opening (10a) to effect fastening of said uprights (1) and said panels (5).

2. The upright (1) according to claim 1, **characterized in that** said threaded connection of the screw/bushing type comprises an internally threaded bushing (12) inserted into a hole (13) of said cap element (11) and a screw (14) screwed to said bushing (12) so as to fasten said plate element (7) to said cap element (11).

3. The upright according to any one of the preceding claims, **characterized in that** said lower fastening means (4) comprise a projecting tab (15) adapted to be coupled to a panel cavity (10).

4. The upright according to claim 3, **characterized in that** said projecting tab (15) is incorporated integrally with said elongated body (3) of said upright (1).

5. The upright according to claim 3 or 4, further comprising in a pedestal (320) on which said elongated body (3) is mounted, **characterized in that** said projecting tab (15) is incorporated in said pedestal (320).

6. The upright according to one of the preceding claims, **characterized in that** said elongated body (3) is of the hollow tubular type, essentially prismatic with four faces, wherein said upper and lower fastening means (4, 6) are provided equally on said faces (16).

7. The upright (1) according to claim 1 or 2, **characterized in that** said upper fastening means (6) comprise a plate (11a) formed with a hole (13a), said plate (11a) being mounted between said cap element (11) and said bushing (12) to effect expansion of said cap element (11) by tightening said screw (14) to said bushing (12), so as to fasten said plate element (7) to said cap element (11).

8. A fixed intrusion prevention fencing (2), comprising a plurality of panels (5) alternated with uprights (1) in succession so that:

- at least one of said uprights (1) is according to one of the preceding claims;
- at least one of said panels (5) has a panel side (17) thereof capable of being supported by said at least one of said uprights (1) by means of said lower fastening means (4) and has an upper panel opening (9a) capable of being retained by said upper fastening means (6).

Patentansprüche

1. Zaunpfosten (1) für eine feststehende Umzäunung (2) zur Einbruchsvermeidung mit Zaunpfosten und Paneelen (5), wobei der Zaunpfosten (1) einen vertikal in die Länge gezogenen Körper (3) mit einer oberen Öffnung (10a) aufweist und die Paneele (5) jeweils eine obere Öffnung (9a) aufweisen, wobei der Zaunpfosten (1) aufweist:

- eine untere Befestigungseinrichtung (4), um zumindest eines der Paneele (5) zu tragen;
- eine obere Befestigungseinrichtung (6), um zumindest eines der Paneele (5) in einer Lage zu sichern, und das eine Sicherungskomponente (7) mit einem Sicherungsvorsprung (8) aufweist, der wirksam nach unten gerichtet ist, so dass es in die obere Paneelöffnung (9a) eingefügt werden kann, um einen Sicherungsvorgang an dem zumindest einen Paneel (5) auszuüben, wobei die obere Befestigungseinrichtung (6) mit der oberen Zaunpfostenöffnung (10a) gekoppelt ist;

dadurch gekennzeichnet, dass:

- die obere Befestigungseinrichtung (6) ein Hutelement (11) aufweist, das aus einem elastisch ausdehnbaren Material besteht, das in die obere Zaunpfostenöffnung (10a) wirksam eingefügt ist;
- die Sicherungskomponente (7) ein Plattenelement ist, das mit dem Sicherungsvorsprung (8), der wirksam nach unten gerichtet ist, ausgebil-

det ist, wobei das Plattenelement (7) wirksam an dem Hutelement (11) montiert ist und an dem Hutelement (11) mittels einer Schrauben/Durchführungs-Gewindeverbindung befestigt ist, wobei sich das Hutelement (11) innerhalb der oberen Öffnung (10a) ausdehnt, um eine Befestigung der Zaunpfosten (1) und der Paneele (5) zu bewirken.

2. Zaunpfosten (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Schrauben/Durchführungs-Gewindeverbindung eine mit einem Innengewinde versehene Durchführung (12), die in ein Loch (13) des Hutelements (11) eingefügt ist, und einer Schraube (14) aufweist, die mit der Durchführung (12) verschraubt ist, so dass das Plattenelement (7) an dem Hutelement (11) befestigt ist.

3. Zaunpfosten nach einem der vorherigen Ansprüche, **dadurch gekennzeichnet, dass** die untere Befestigungseinrichtung (4) eine vorstehende Lasche (15) aufweist, die geeignet ist, mit einem Paneelhohlraum (10) gekoppelt zu werden.

4. Zaunpfosten nach Anspruch 3, **dadurch gekennzeichnet, dass** die vorstehende Lasche (15) in den in die Länge gezogenen Körper (3) des Zaunpfostens (1) integriert ist.

5. Zaunpfosten nach Anspruch 3 oder 4, ferner aufweisend einen Ständer (320), auf dem der in die Länge gezogene Körper (3) montiert ist, **dadurch gekennzeichnet, dass** die vorstehende Lasche (15) in dem Ständer (320) aufgenommen ist.

6. Zaunpfosten nach einem der vorherigen Ansprüche, **dadurch gekennzeichnet, dass** der in die Länge gezogene Körper (3) ein hohles Rohr ist, im Wesentlichen prismatisch mit vier Flächen ist, wobei die obere und die untere Befestigungseinrichtung (4, 6) in gleicher Weise auf den vier Flächen (16) angeordnet sind.

7. Zaunpfosten (1) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die obere Befestigungseinrichtung (6) eine Platte (11a) aufweist, die mit einem Loch (13a) ausgebildet ist, wobei die Platte (11a) zwischen dem Hutelement (11) und der Durchführung (12) montiert ist, um eine Ausdehnung des Hutelements (11) zu bewirken, indem die Schraube (14) an der Durchführung (12) festgezogen wird, um das Plattenelement (7) an dem Hutelement (11) zu befestigen.

8. Feststehende Umzäunung (2) zur Einbruchsvermeidung, aufweisend eine Mehrzahl von sich aufeinanderfolgend mit Zaunpfosten (1) abwechselnden Paneelen (5), so dass:

- zumindest einer der Zaunpfosten (1) einem der vorherigen Ansprüche entspricht;
- zumindest bei einem der Paneele (5) eine Paneelseite (17) derselben durch den zumindest einen der Zaunpfosten (5) mittels der unteren Befestigungseinrichtung (4) getragen werden kann und eine obere Paneelöffnung (9a) durch die obere Sicherungseinrichtung (6) gesichert werden kann.

Revendications

1. Un montant (1) pour barrière fixe anti-intrusion (2) du type avec des montants et des panneaux (5), ledit montant (1) ayant un corps (3) allongé verticalement avec une ouverture supérieure (10a) et chacun desdits panneaux (5) ayant une ouverture supérieure (9a), ledit montant (1) comprenant :

- des moyens de fixation inférieurs (4) pour supporter au moins un desdits panneaux (5) ;
- des moyens de fixation supérieurs (6) pour maintenir au moins un desdits panneaux (5) en place et comprenant une pièce de maintien (7) ayant un protubérance de maintien (8) orientée vers le bas en utilisation, de sorte à pouvoir être insérée à l'intérieur de ladite ouverture supérieure (9a) du panneau pour réaliser une action de maintien sur ledit au moins un panneau (5) ; lesdits moyens de fixation supérieurs (6) étant associés à l'ouverture supérieure (10a) du montant ;

caractérisé en ce que :

- lesdits moyens de fixation supérieurs (6) comprennent un élément d'embout (11) fait d'un matériau élastiquement expansible inséré en utilisation à l'intérieur de ladite ouverture supérieure (10a) du montant ;
- ladite pièce de maintien (7) est un élément de plaque formé avec ladite protubérance de maintien (8) orientée vers le bas en utilisation (11), ledit élément de plaque (7) étant monté en utilisation sur l'élément d'embout (11) et étant fixé audit élément d'embout (11) au moyen d'une liaison filetée du type vis/douille, dans lequel ledit élément d'embout (11) s'épand au sein de l'ouverture supérieure (10a) pour effectuer la fixation desdits montants (1) et desdits panneaux (5).

2. Le montant (1) selon la revendication 1, **caractérisé en ce que** la liaison filetée du type vis/douille comprend une douille (12) intérieurement filetée insérée à l'intérieur d'un trou (13) dudit élément d'embout (11) et une vis (14) vissée à ladite douille (12) de manière à fixer ledit élément de plaque (7) audit élément d'embout (11).

3. Le montant selon l'une quelconque des revendications précédentes, **caractérisé en ce que** lesdits moyens de fixation inférieurs (4) comprennent une languette en saillie (15) adaptée pour être associée à un logement (10) du panneau.

4. Le montant selon la revendication 3, **caractérisé en ce que** la languette en saillie (15) est intégralement incorporée avec ledit corps allongé (3) dudit montant (1).

5. Le montant selon la revendication 3 ou 4, comprenant en outre un socle (320) sur lequel ledit corps allongé (3) est monté, **caractérisé en ce que** ladite languette en saillie (15) est incorporée dans ledit socle (320).

6. Le montant selon l'une des revendications précédentes, **caractérisé en ce que** ledit corps allongé (3) est du type tubulaire creux, sensiblement prismatique avec quatre faces, dans lequel lesdits moyens de fixation supérieurs et inférieurs (4, 6) sont prévus en nombre égal sur les faces (16).

7. Le montant (1) selon la revendication 1 ou 2, **caractérisé en ce que** lesdits moyens de fixation supérieurs (6) comprennent une plaque (11a) formée avec un trou (13a), ladite plaque (11a) étant montée entre ledit élément d'embout (11) et ladite douille (12) pour effectuer l'expansion dudit élément d'embout (11) par serrage de ladite vis (14) à ladite douille (12), de manière à fixer ledit élément plaque (7) audit élément d'embout (11).

8. Une barrière fixe anti-intrusion (2), comprenant en enchaînement une pluralité de panneaux (5) alternés avec des montants (1) de sorte qu' :

   - au moins un desdits montants (1) est selon l'une des revendications précédentes ;
   - au moins un desdits panneaux (5) a un côté (17) de ce panneau apte à être supporté par ledit au moins un desdits montants (1) au moyen desdits moyens de fixation inférieurs (4) et a une ouverture supérieure (9a) du panneau apte à être maintenue par lesdits moyens de fixation supérieurs (6).

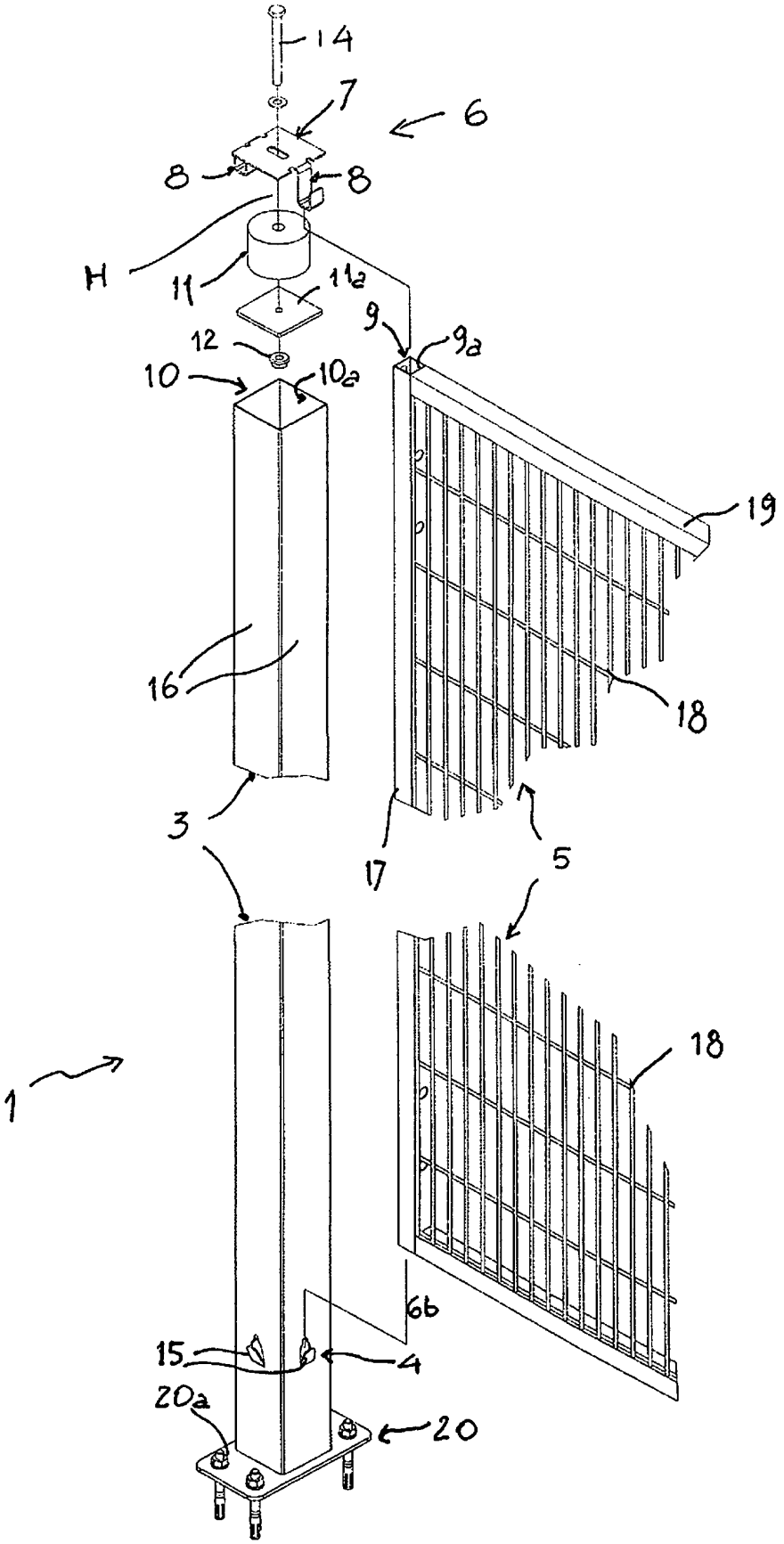


FIG. 1

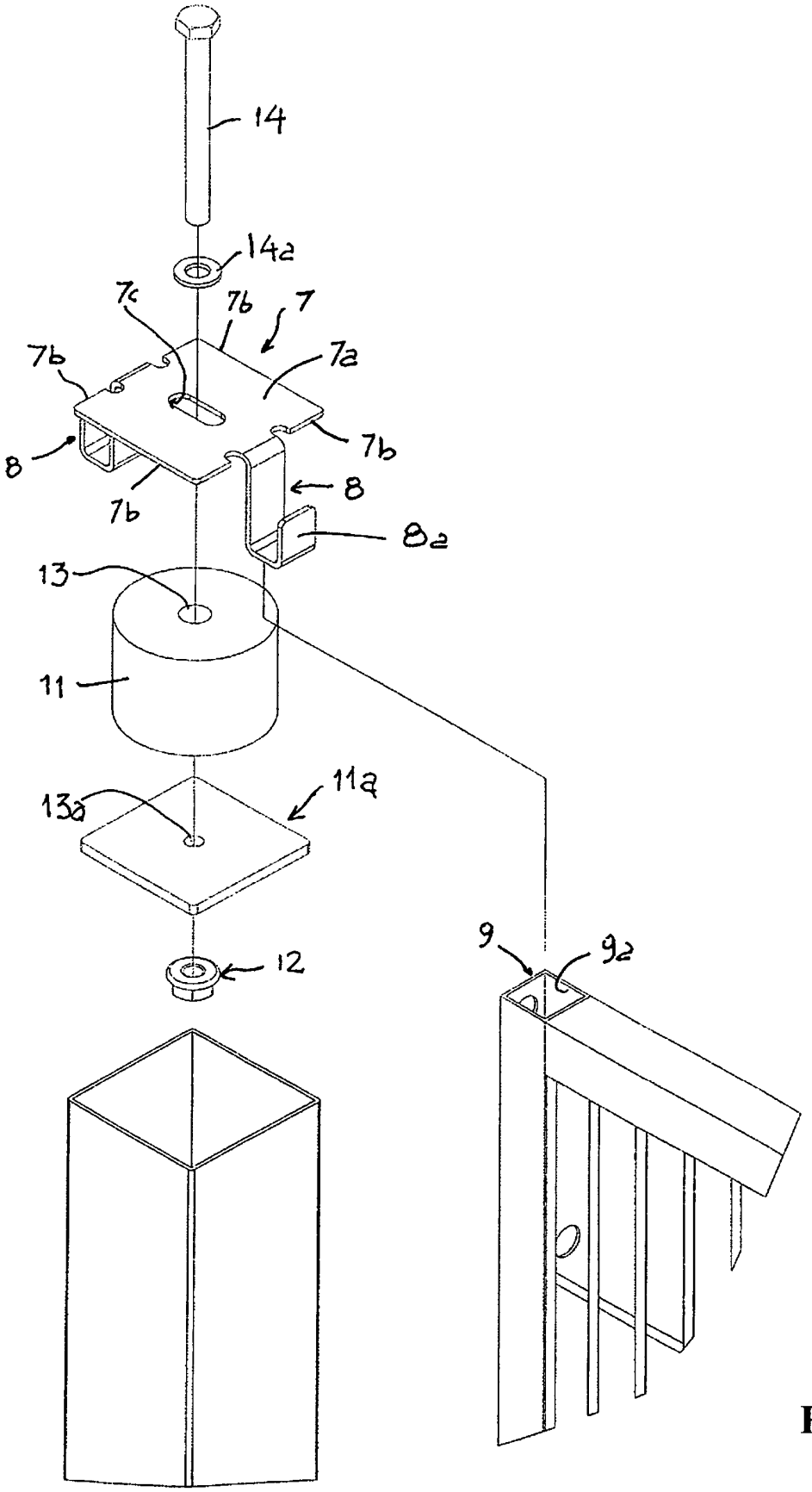


FIG. 2

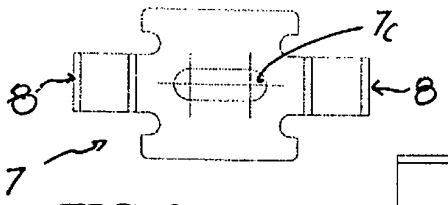


FIG. 3A

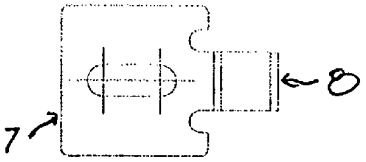


FIG. 3B

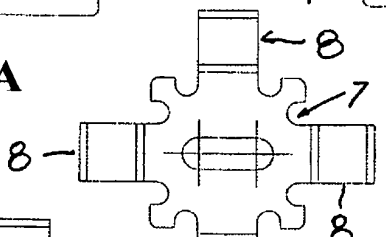


FIG. 3E

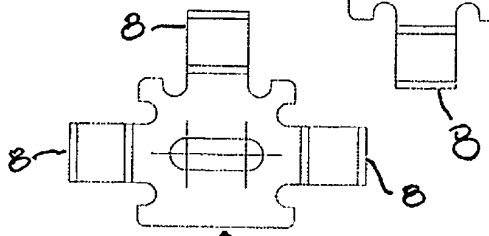


FIG. 3D

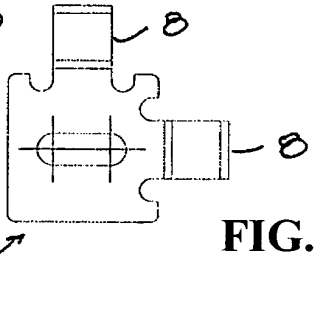


FIG. 3C

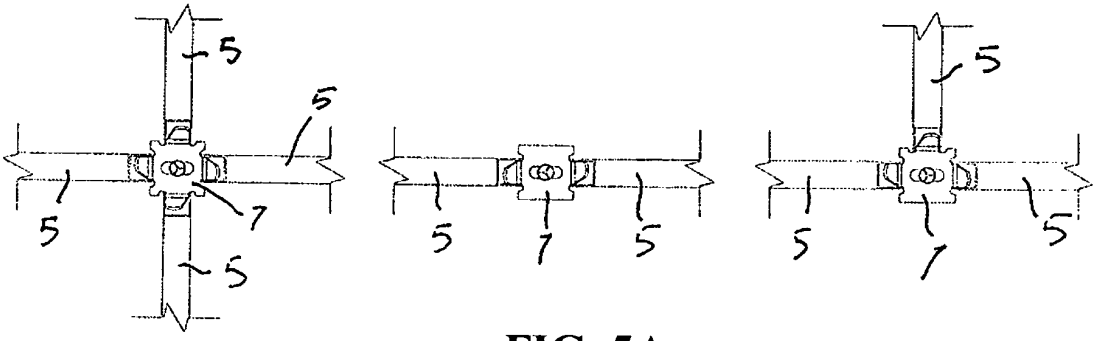


FIG. 5A

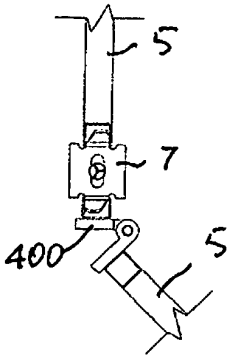
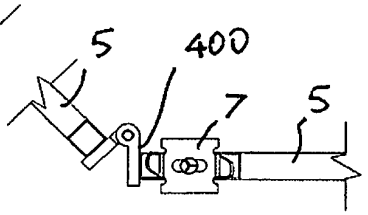


FIG. 5B



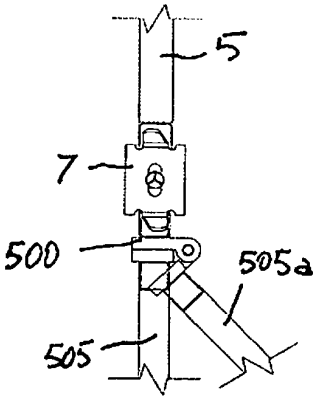


FIG. 5C

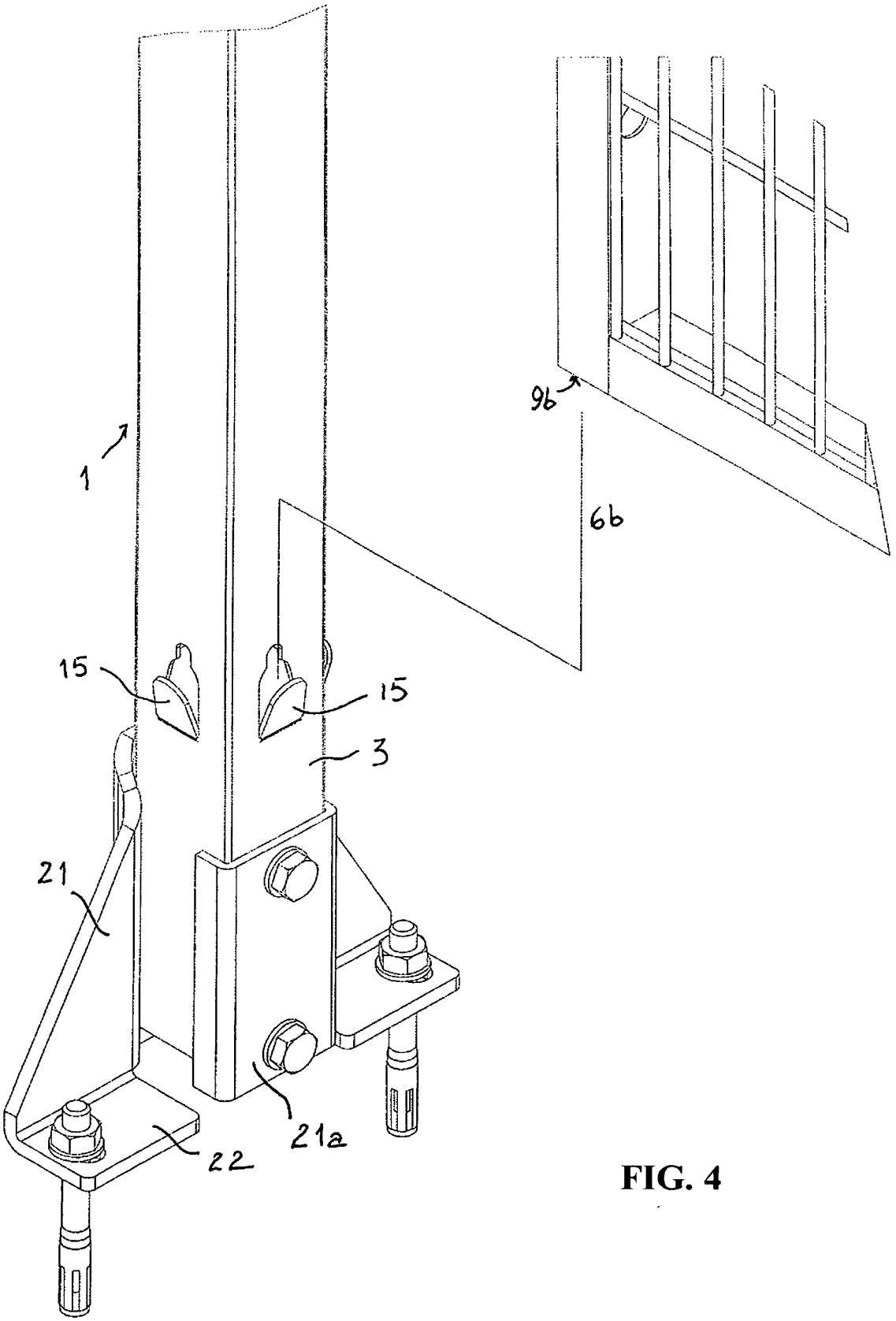


FIG. 4

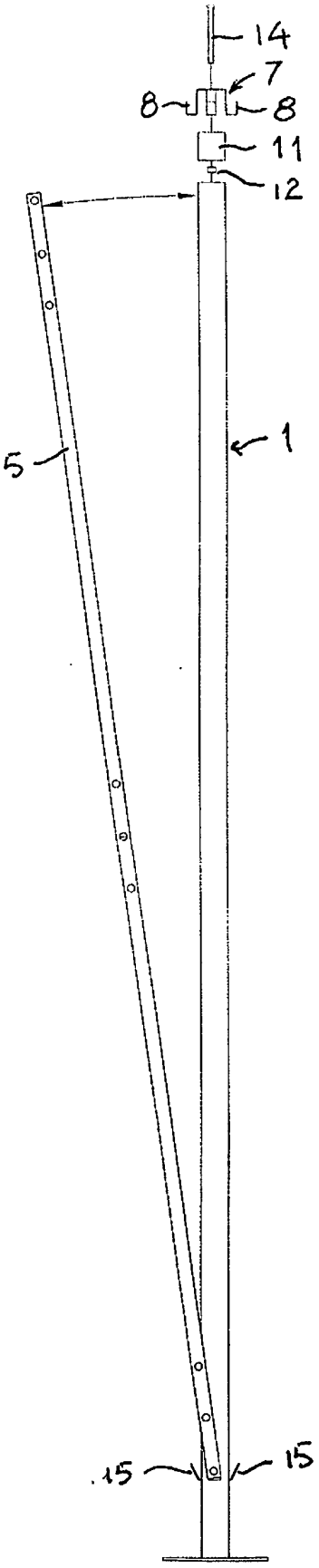


FIG. 6

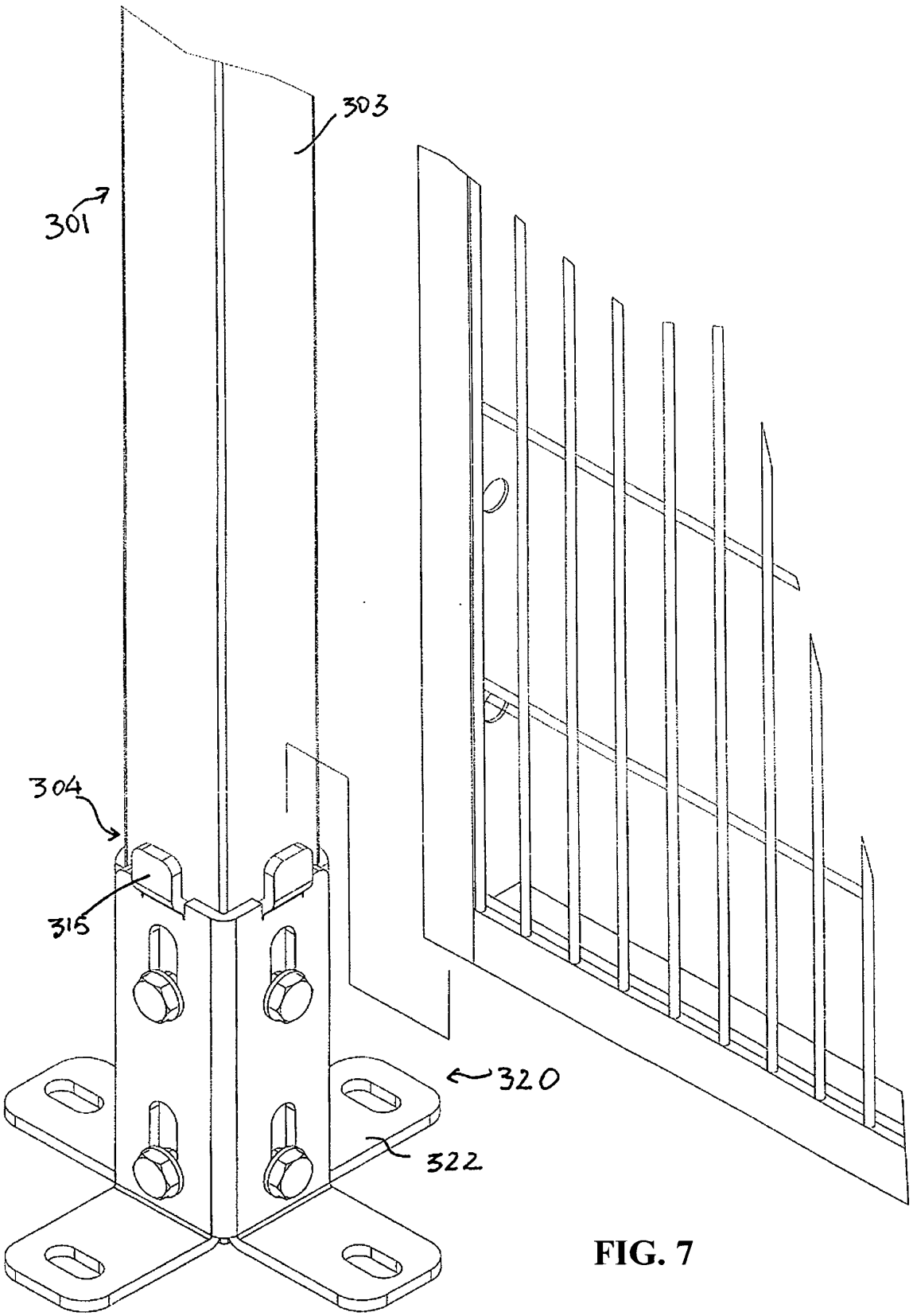


FIG. 7

REFERENCES CITED IN THE DESCRIPTION

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