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(54) **STRUCTURE FOR PROVIDING A PHYSICAL OR VISUAL BARRIER**

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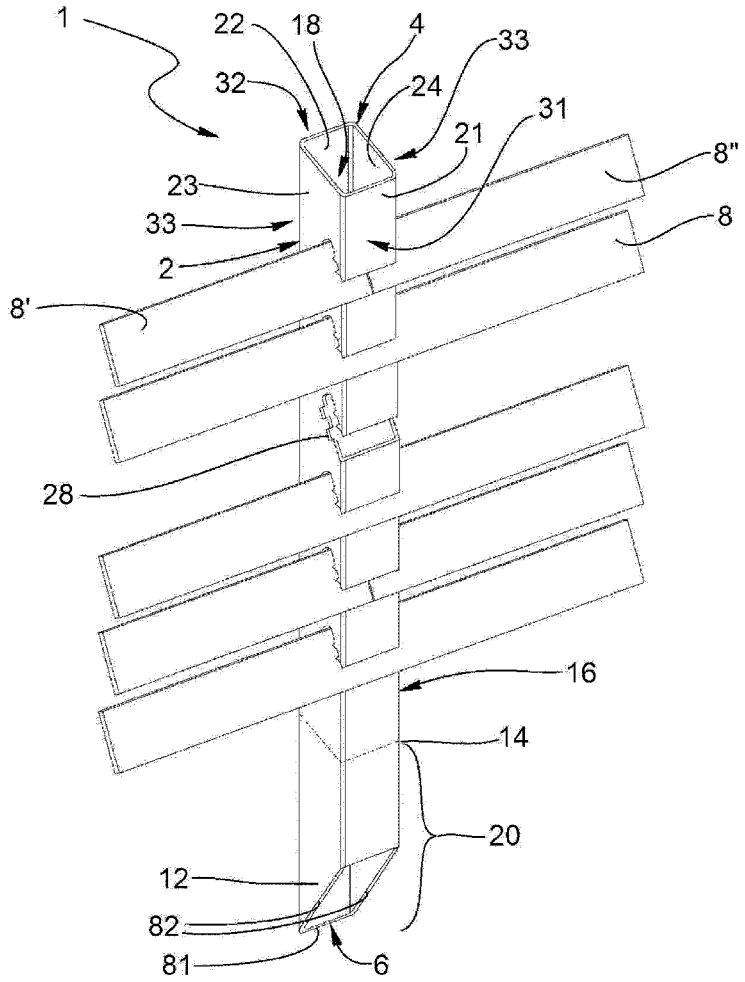
(57) **ABSTRACT**

A structure (**1**) for providing a physical or visual barrier comprises at least one post (**2**) mounted to a supporting surface and to which is secured at least one slat (**8**) by at least one wedge (**10**). The post (**2**) has a beam 31 (**16**) extending upwards from a footing. The beam (**16**) comprises at least one longitudinally extending plate which at least partially encloses a hollow (**18**). The beam has at least one plate that extends between opposite left and right sides (**33**, **34**). The beam has at least one plate that extends between opposite front and rear sides (**31**, **32**). The beam (**16**) is cut through by at least one slot (**28**) extending rearwards from the front side (**31**) part of the way towards the rear side (**32**). The slot (**28**) is configured to receive a portion of a slat (**8**) when inserted into the slot (**28**) in an insertion direction from the front side (**31**) of the beam (**16**). The slat (**8**) then extends laterally away from at least one of the sides (**33**, **34**). Each slot (**28**) has a width that provides a sufficient clearance gap (**29**) with the slat (**8**) whereby a tip (**40**) of the wedge (**10**) may be driven into the gap (**29**) from one side of the beam (**16**) to secure the slat (**8**) to the beam (**16**).



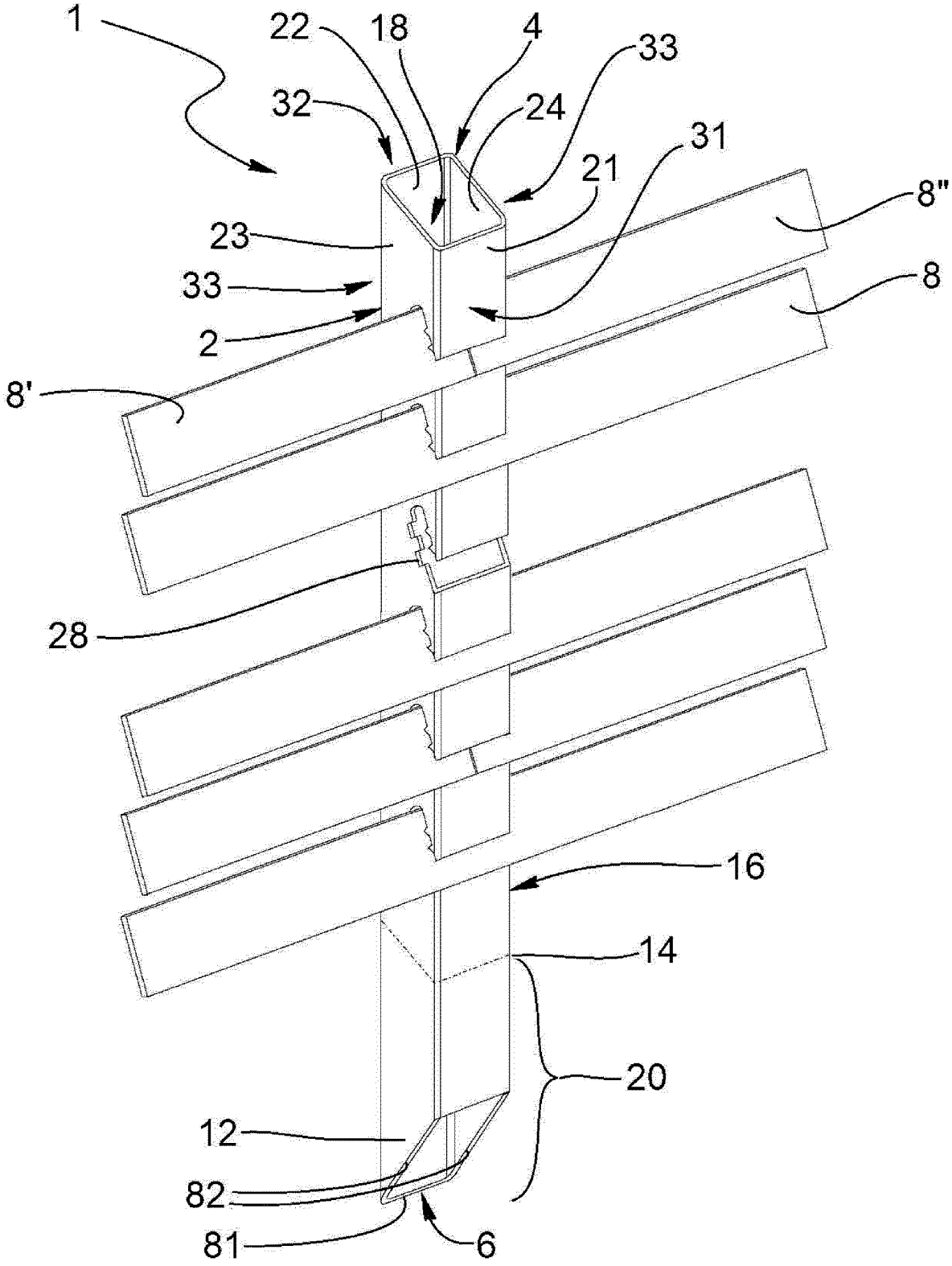


Fig. 1

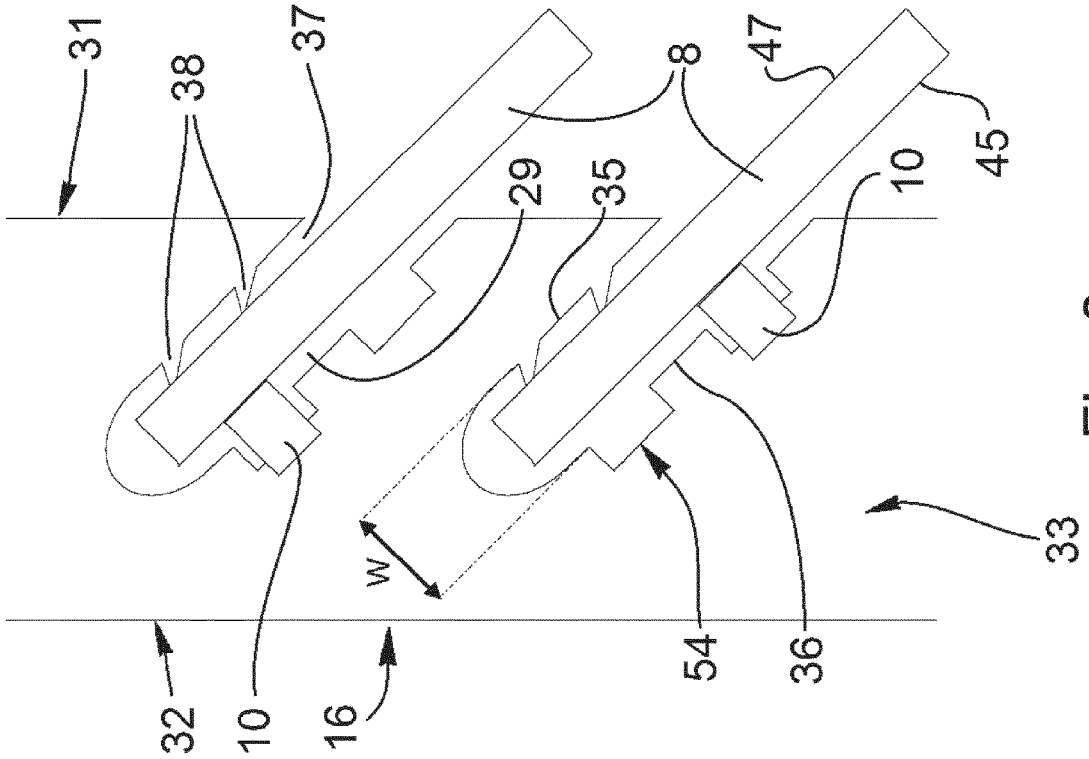

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Fig. 3

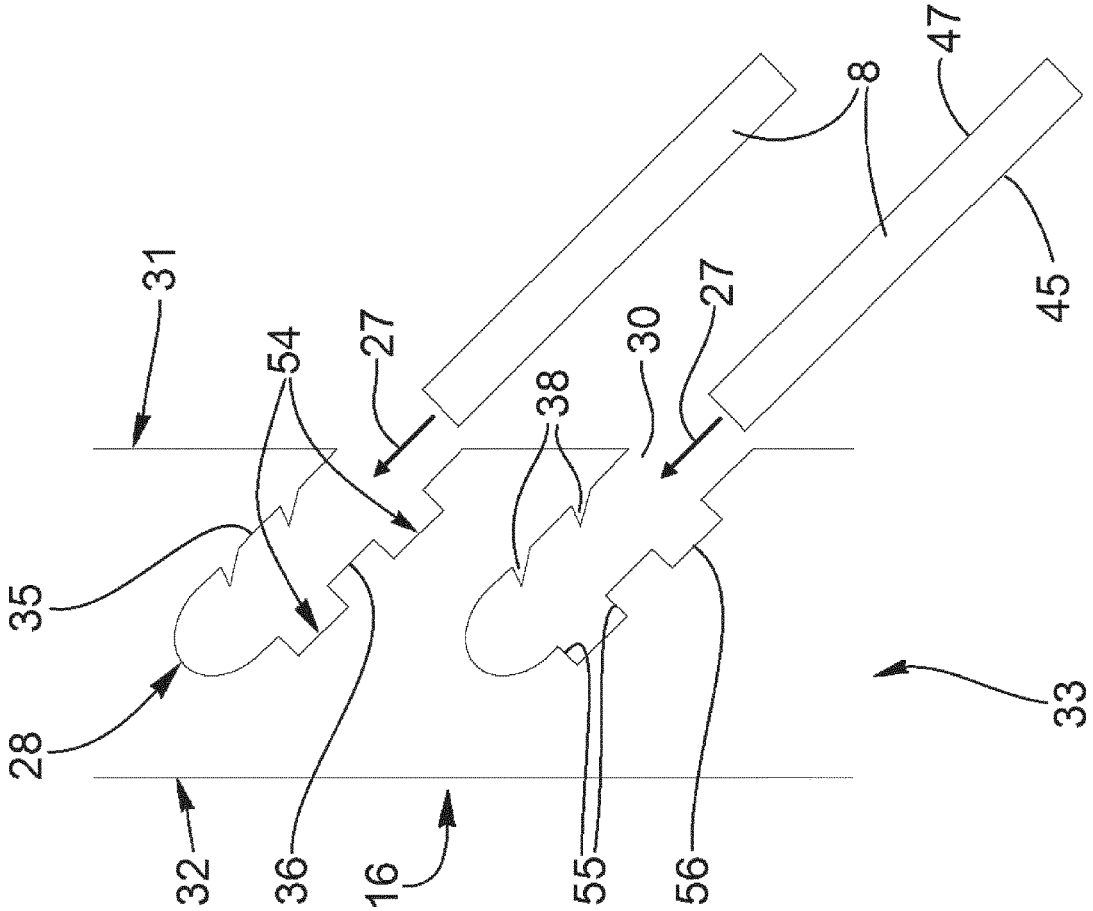
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Fig. 2

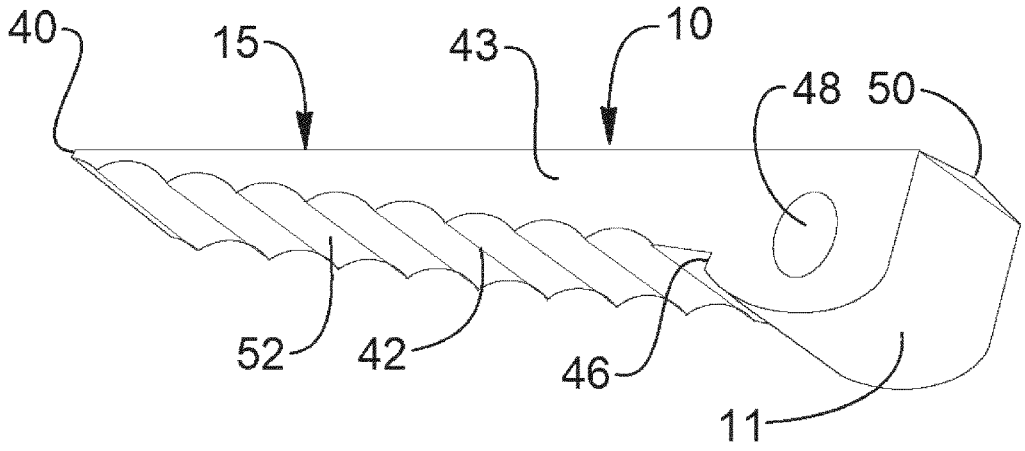


Fig. 4

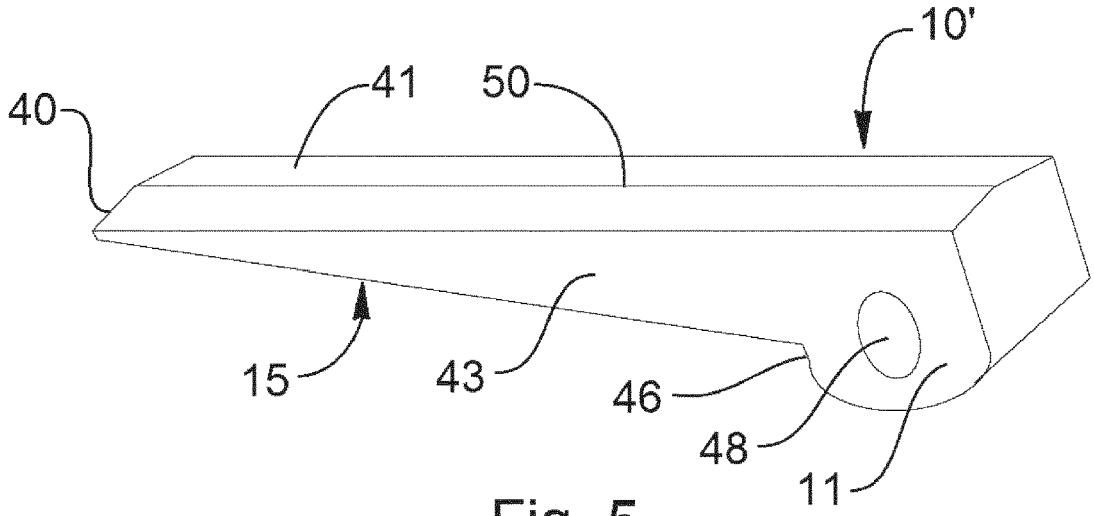


Fig. 5

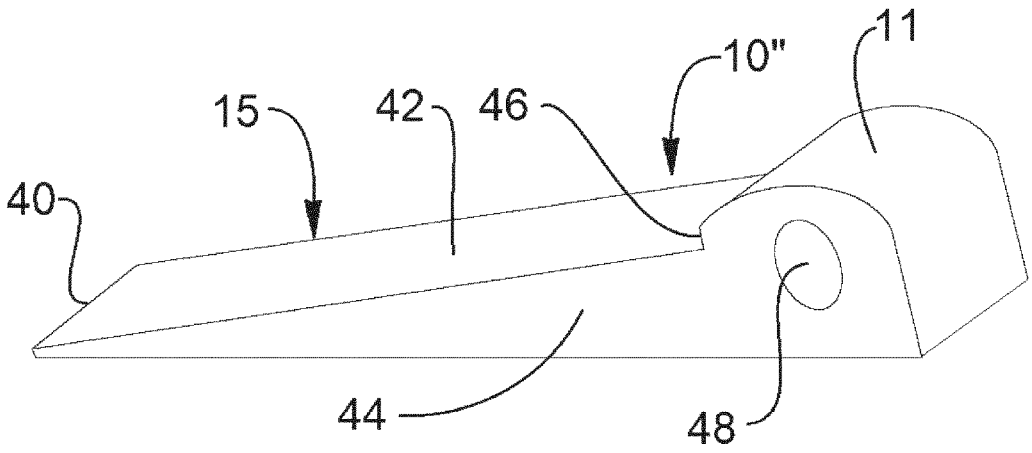


Fig. 6

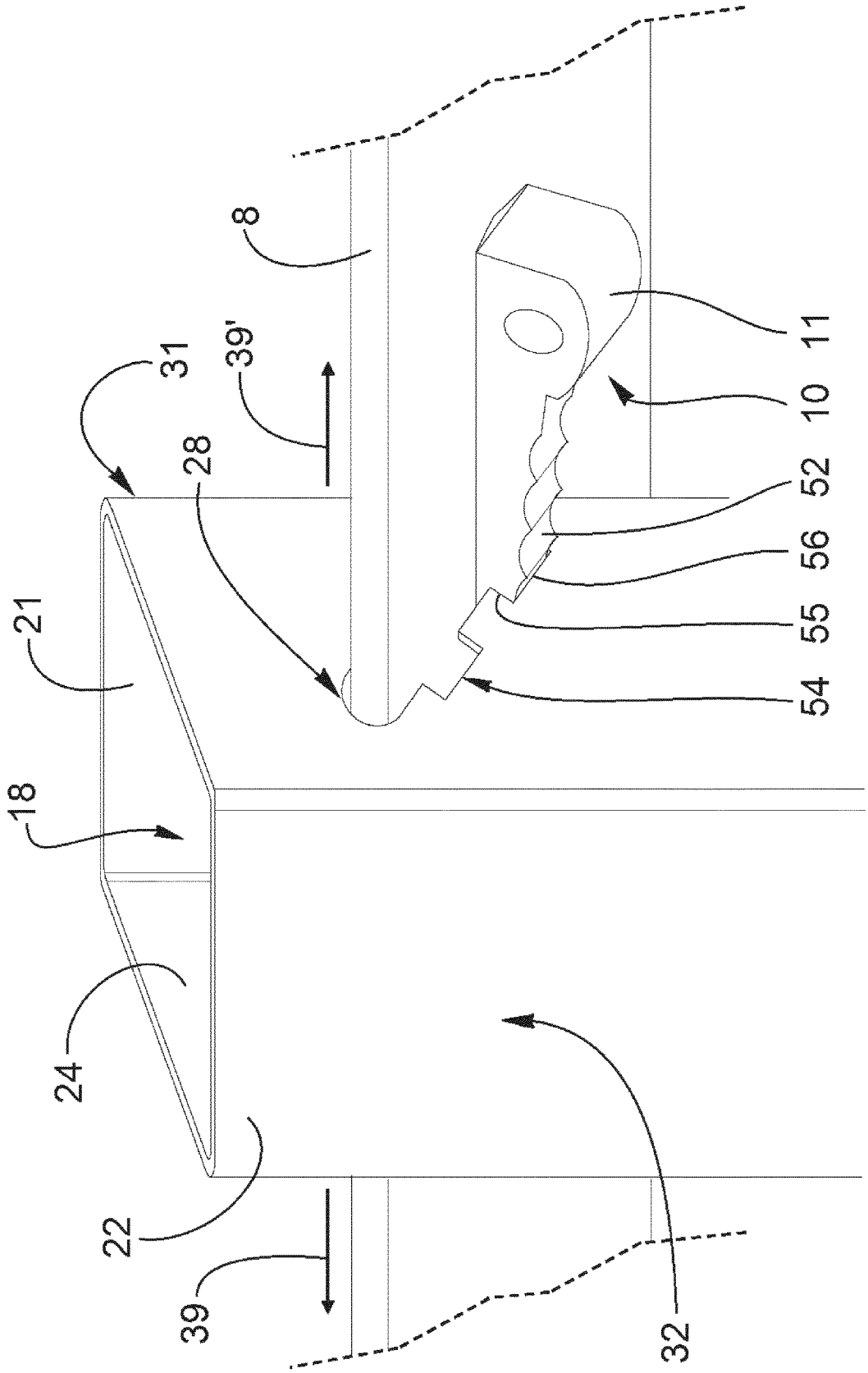
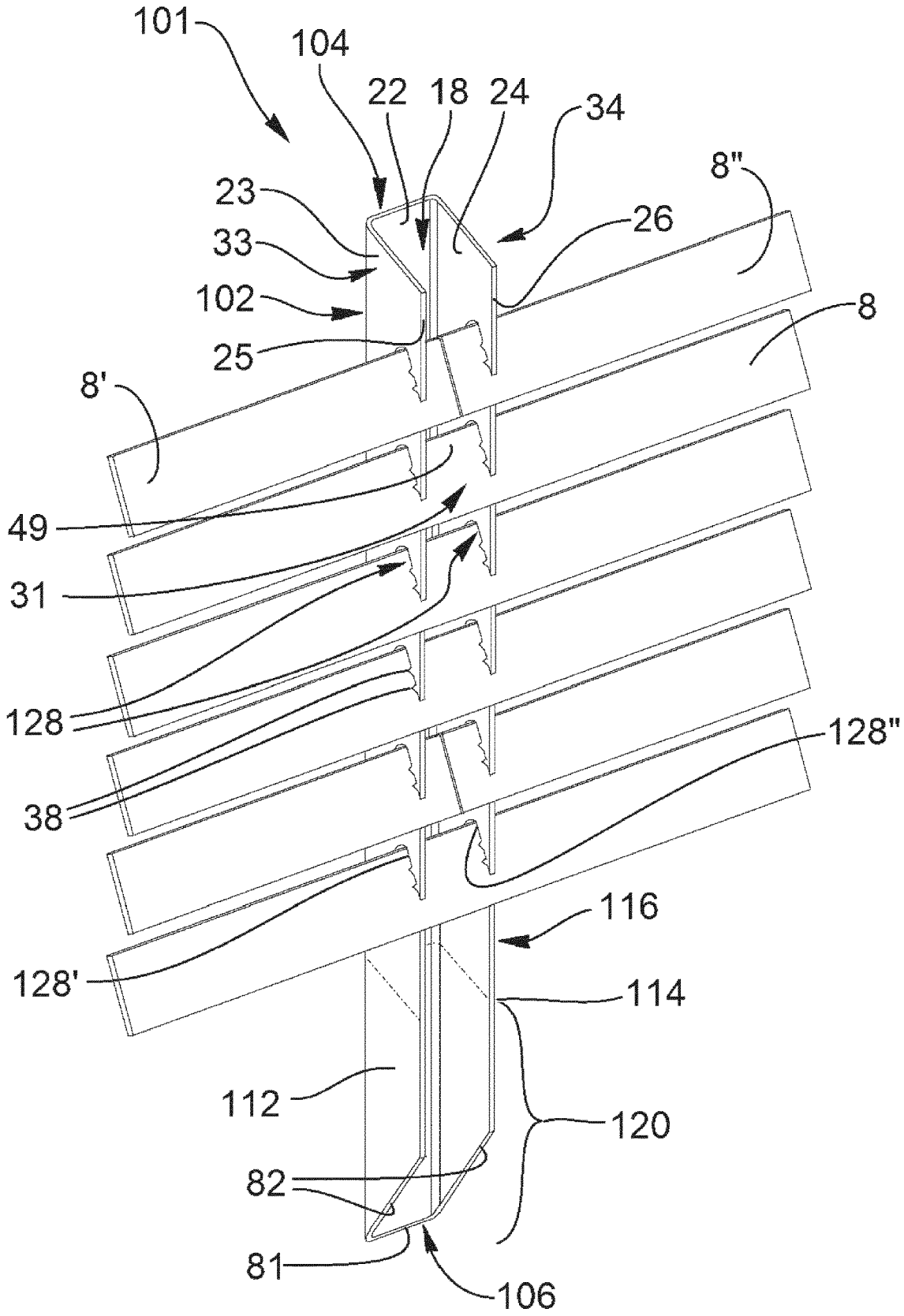


Fig. 7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18
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8"
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82
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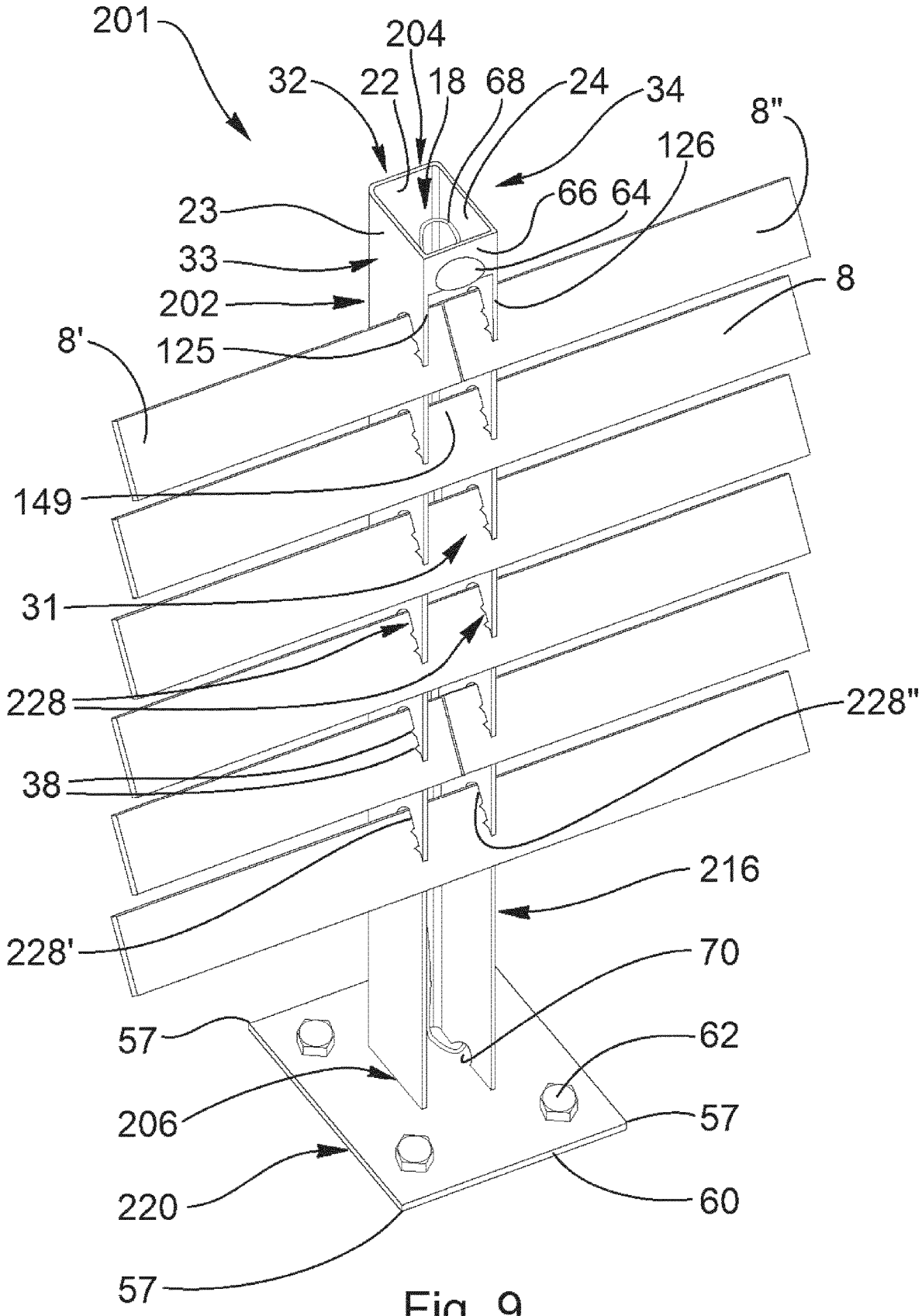
Fig. 8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202
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228'
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206
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220
60
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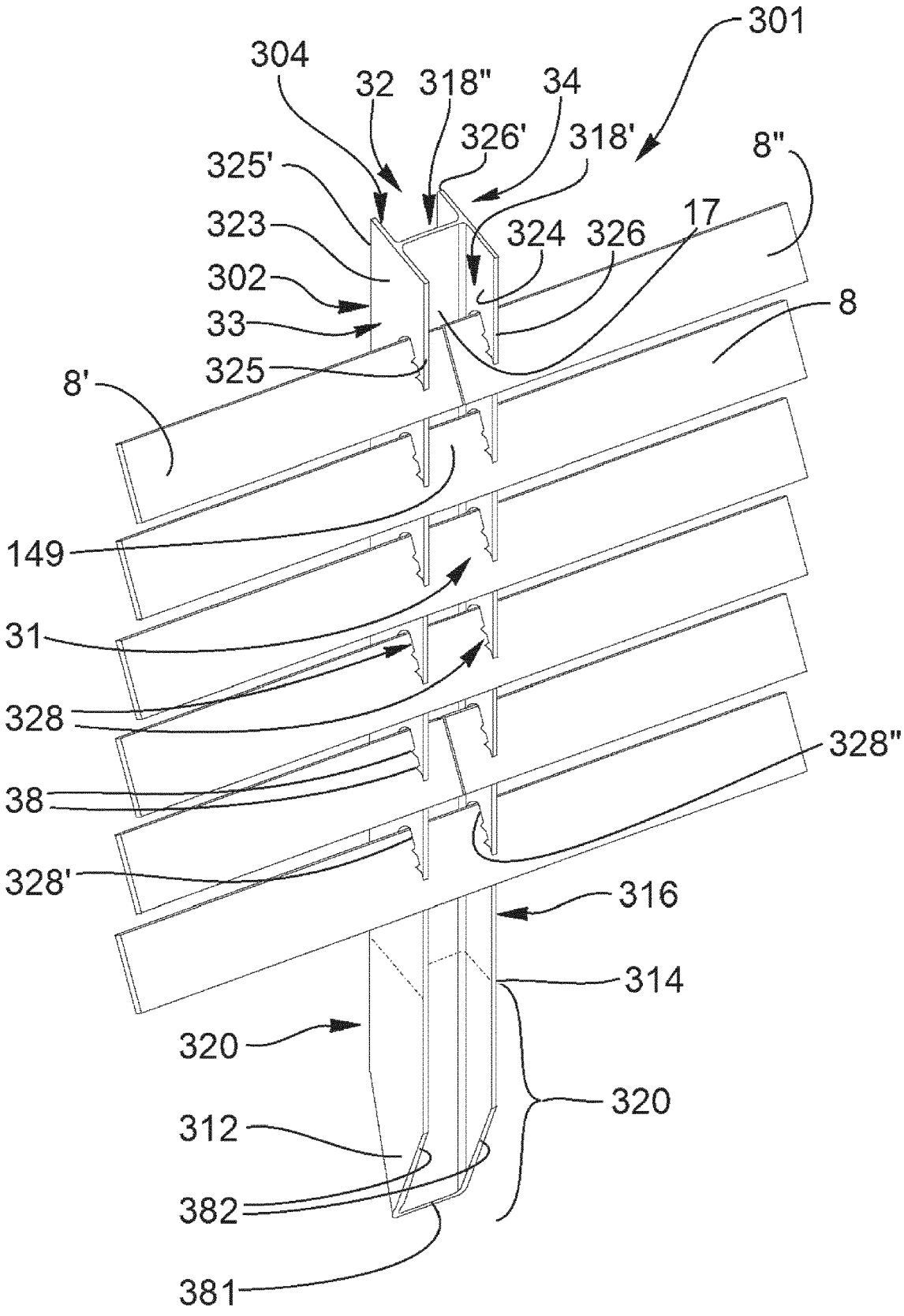
Fig. 9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325'
323
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328"
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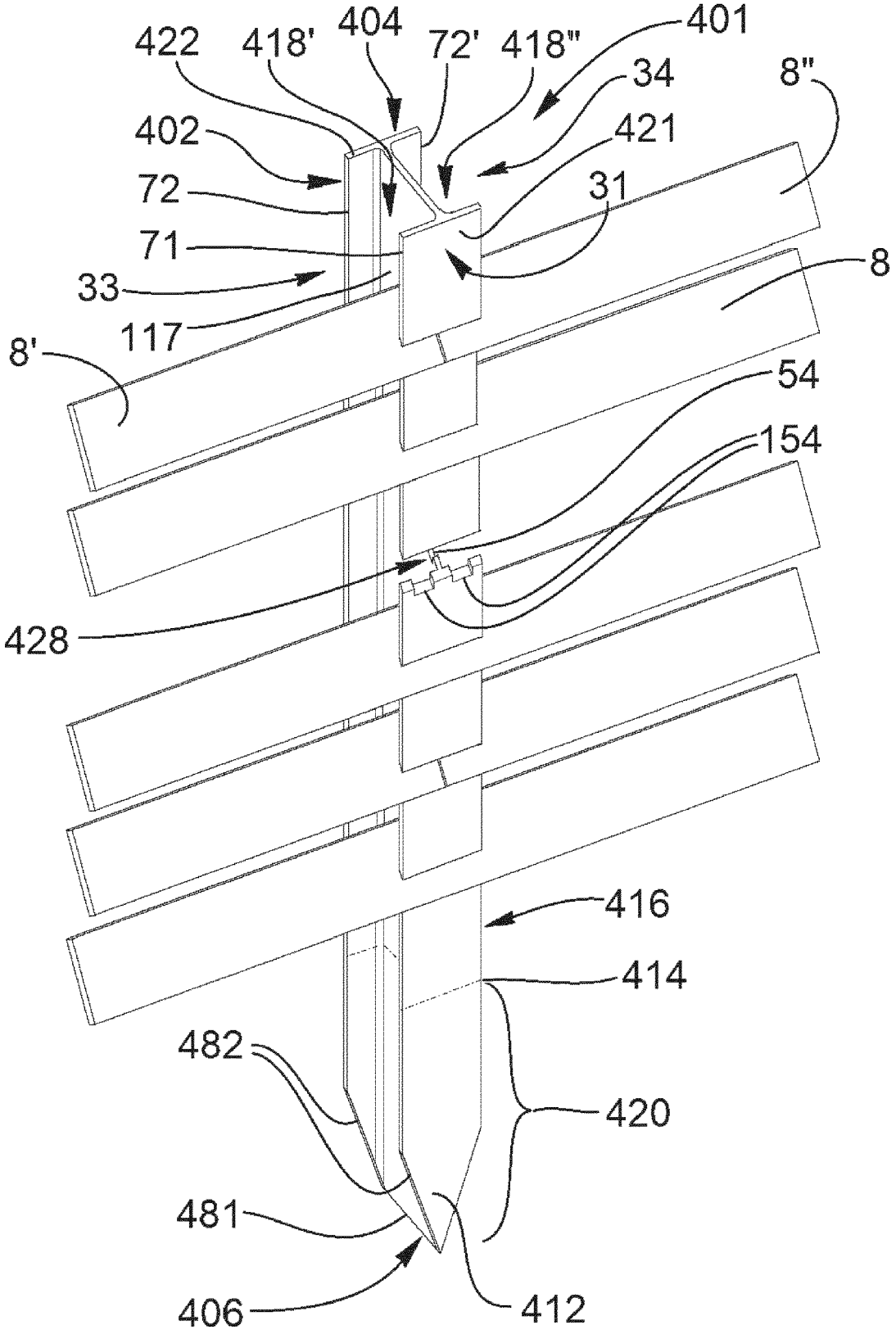
Fig. 10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418"
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8"
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412

Fig. 11

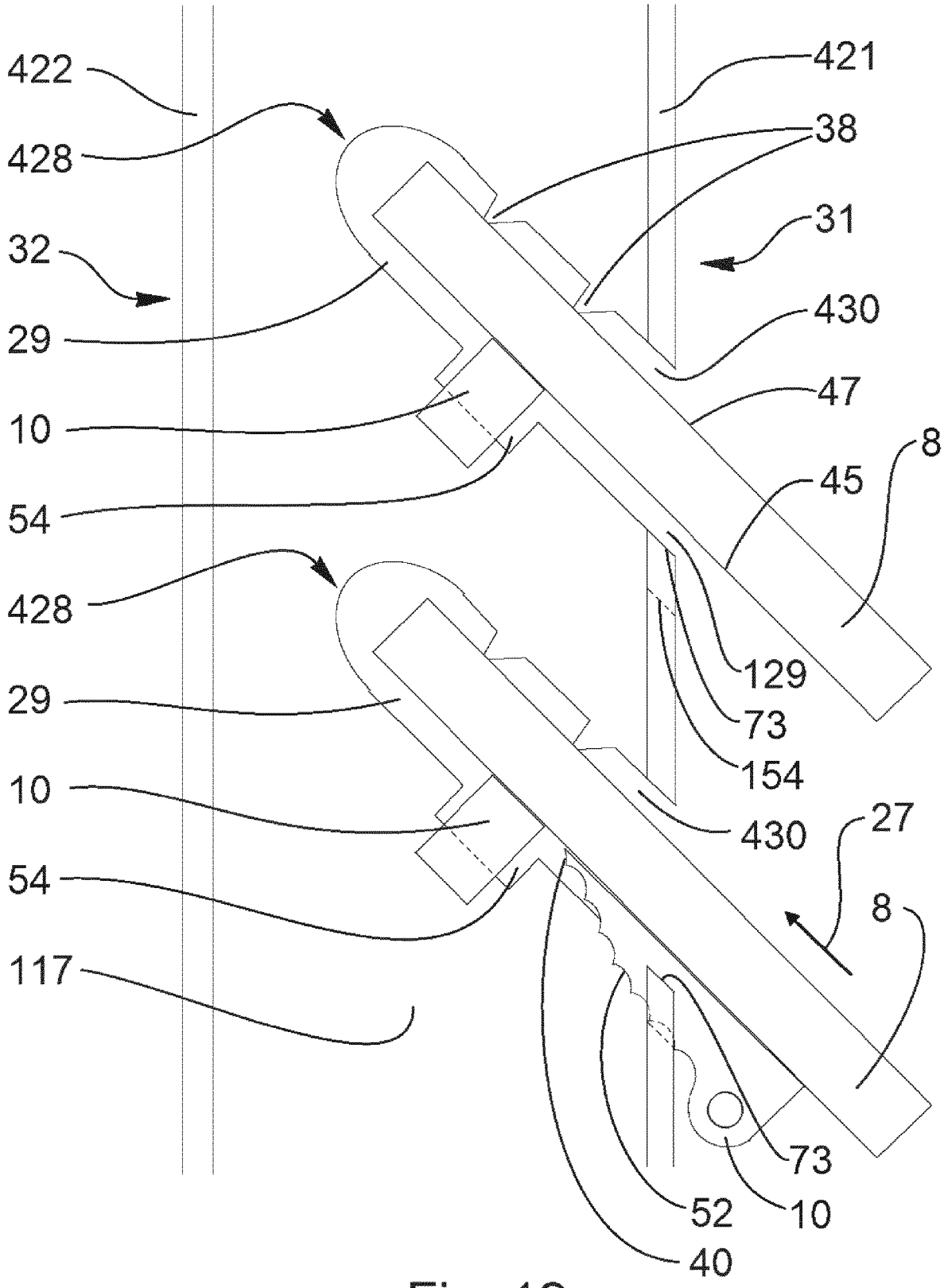
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Fig. 12

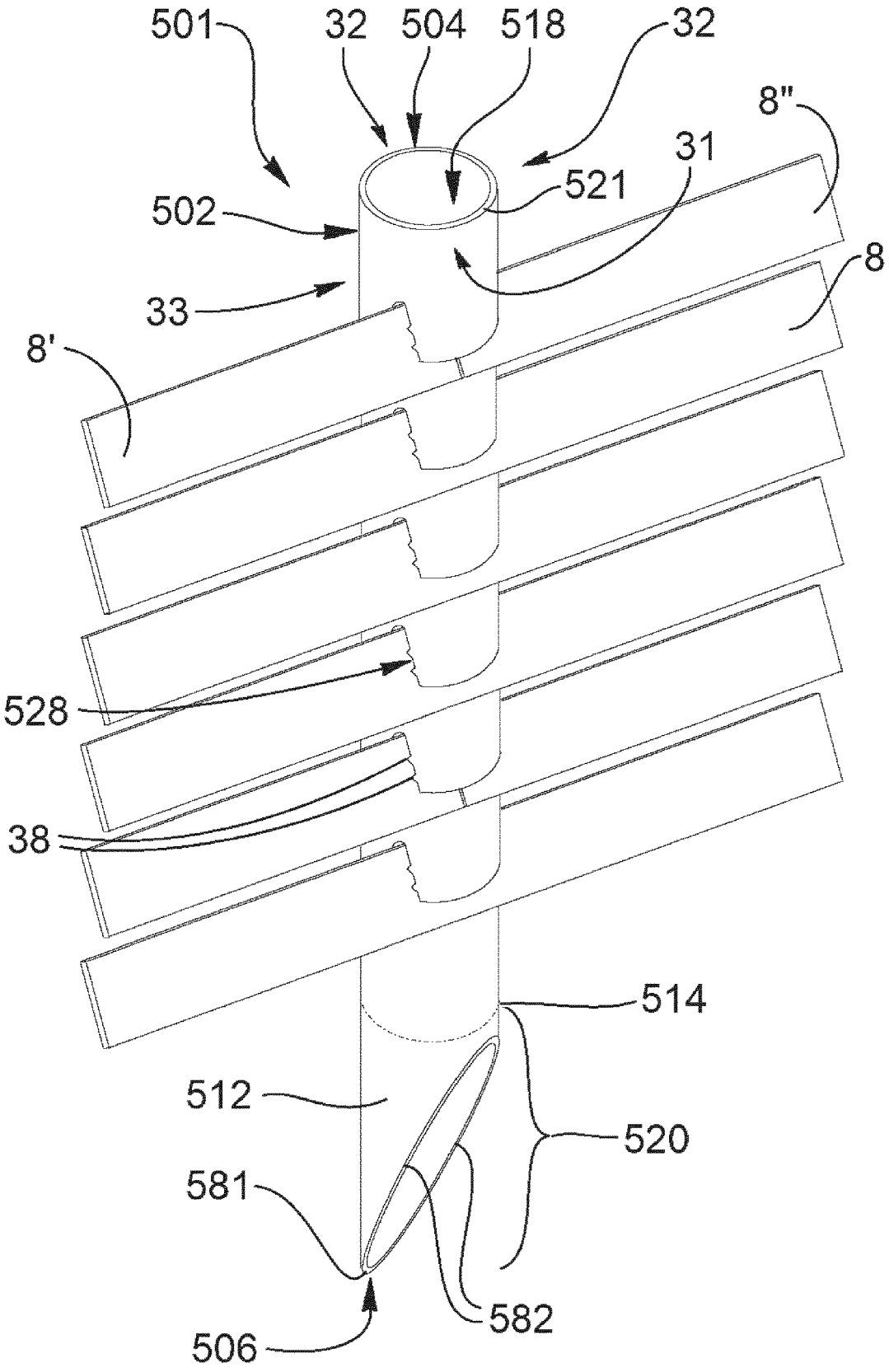

Fig. 13

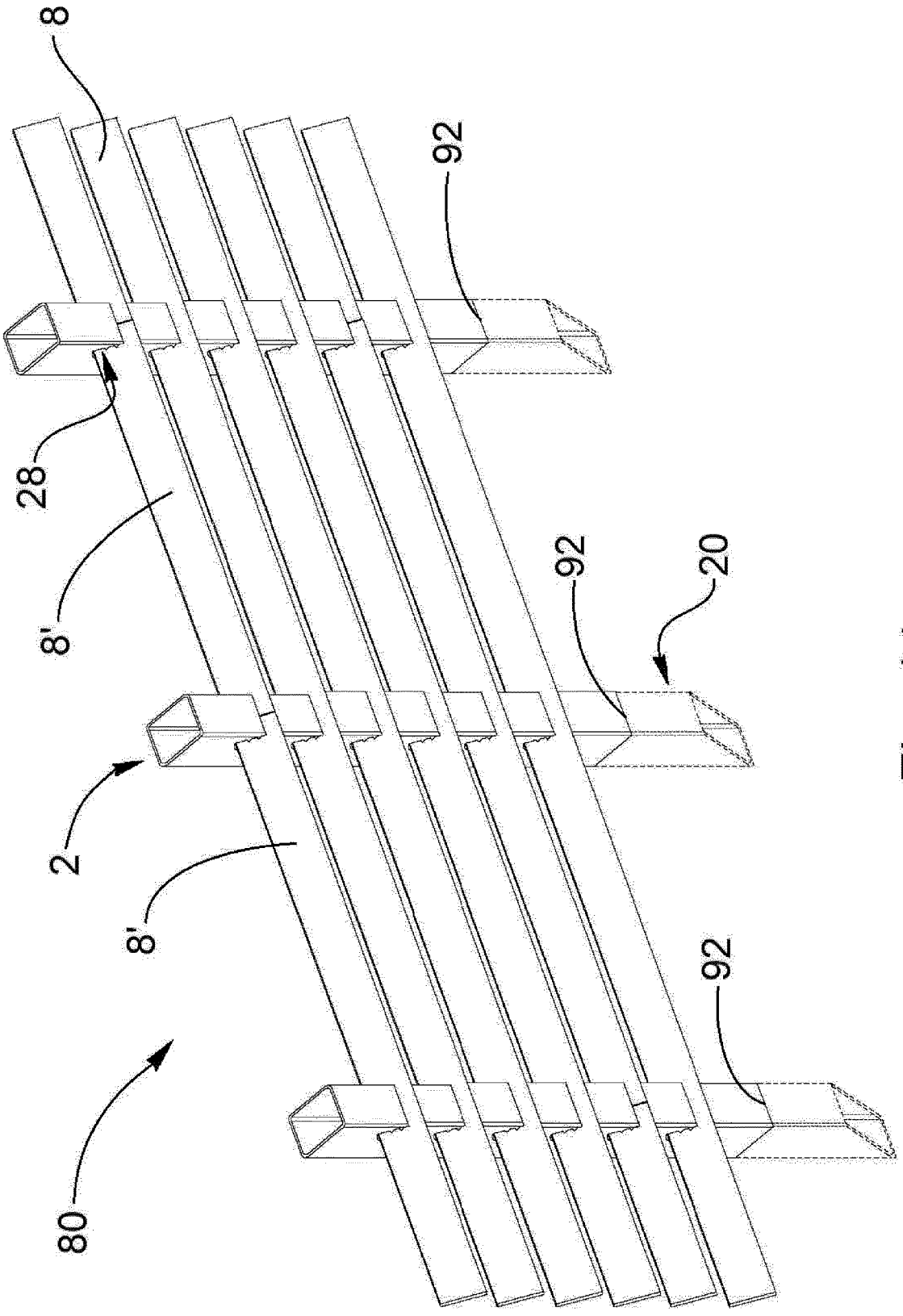

Fig. 14

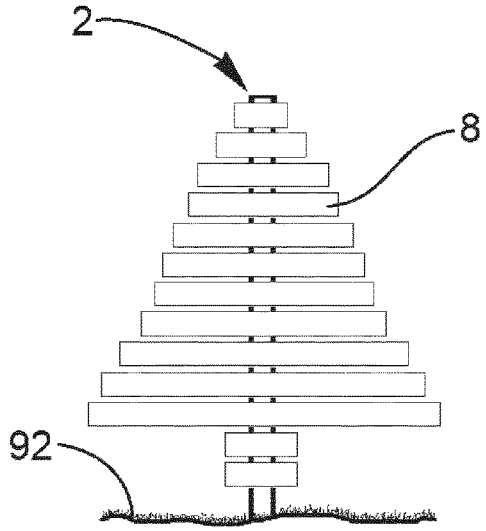

Fig. 15A

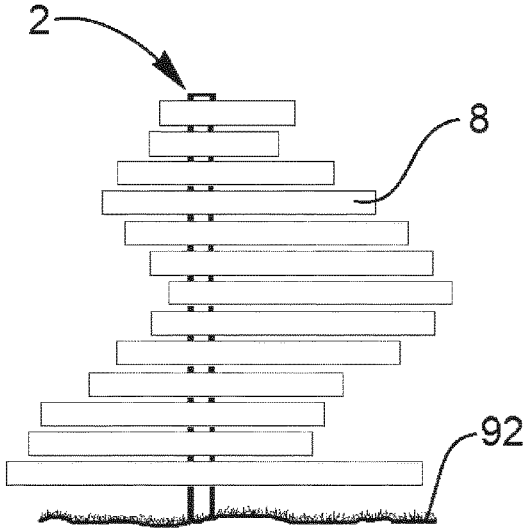

Fig. 15B

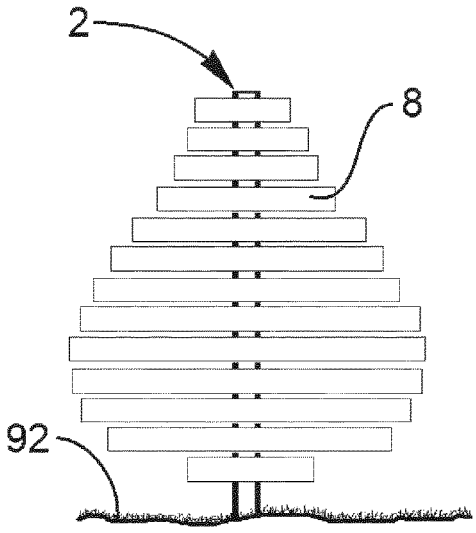

Fig. 15C

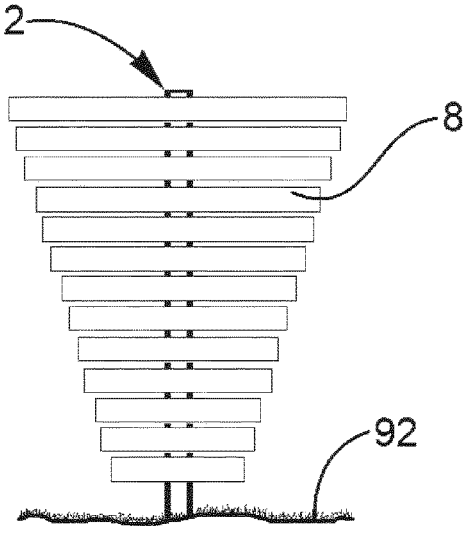

Fig. 15 D

STRUCTURE FOR PROVIDING A PHYSICAL OR VISUAL BARRIER

FIELD OF THE INVENTION

[0001] The present invention relates to a structure for providing a physical or visual barrier and a method for providing such a barrier, for example a fence or landscaping screen.

BACKGROUND TO THE INVENTION

[0002] There is often a need for barrier structures in both domestic and commercial environments. Barrier structures may be used to provide a visual barrier, for example for privacy, shade, or concealment, and/or a physical barrier, for instance to prevent access, or to provide shelter or containment. Being conspicuous by nature, the visual appearance of barrier structures is important.

[0003] Barrier structures typically include parts for assembly in situ, such as upright posts and cross-members or panels, which span between the posts. A widely used barrier structure is a fence comprising spaced apart concrete posts, each post having a vertical retaining groove on opposite sides. The posts are typically cemented in the ground. Prefabricated panels, typically of wood, are used to fill the space between the posts. Each panel is slid vertically into the grooves in two adjacent posts such that a panel spans between two posts. Such barrier structures may also comprise horizontal concrete beams, spanning between the lower ends of the posts, each bar having a horizontal retaining groove in which the lower edge of a panel can be seated. In this arrangement, the panels contribute little to the overall strength of the barrier structure. Instead, the structural integrity of the barrier is determined largely by the concrete posts, which are therefore vulnerable to damage, and may be inconvenient to replace.

[0004] The grooves in the posts and beam may collect rainwater, which can cause rotting of the edges of each wooden panel, requiring replacement of the entire panel. A further problem associated with these structures is that under high winds, the panels can deform and escape the retaining grooves. In addition, the concrete posts and beams are often considered unsightly.

[0005] It is an object of the present invention to provide a structure for providing a physical or visual barrier, and also a method of assembling such a structure, that addresses at least some of these problems.

SUMMARY OF THE INVENTION

[0006] According to a first aspect of the invention, there is provided a structure for providing a physical or visual barrier as set forth in Claim **1** of the appended set of claims.

[0007] The structure when in situ to provide the physical or visual barrier, comprises at least one post mounted to a supporting surface and to which is secured at least one slat by at least one wedge. The post comprises a beam that extends upwards from a footing. The beam comprises at least one longitudinally extending plate which at least partially encloses a hollow. The, or each, plate need not be planar but may be curved and in one embodiment there is just one plate that is curved into a cylindrical tube.

[0008] The beam may have at least one plate that extends between opposite left and right sides of the beam, and also may have at least one plate that extends between opposite front and rear sides of the beam. The beam is cut through by at least one slot that extends rearwards from the front side part of the way towards the rear side. The slot is configured to receive a portion of a slat when inserted into the slot in an insertion direction from the front side of the beam. The slat then extends laterally away from at least one of the sides.

[0009] Each slot has a width that provides a sufficient clearance gap with the slat whereby a tip of the wedge may be driven into the gap from one side of the beam to secure the slat to the beam.

[0010] In some embodiments of the invention, the elongate beam has a substantially square or rectangular envelope in a plane transverse to the longitudinal direction.

[0011] The post is preferably metallic. For example, the post may be formed from corrosion resistant steel. The slats are preferably non-metallic. For example, the slats may be planks, such as wooden planks, or lengths of plastic board. The material of the slats is most preferably more compliant in comparison with that of the post and wedges, so that the post and/or wedges can dig into the slats when the wedges are driven into place. The use of wedges to secure the slats allows the use of slats having different thicknesses.

[0012] The, or each, hollow allows air to circulate around edges of the slot and over a portion of the slat that intersects the hollow. This helps to prevent rot or corrosion of materials, for example metal of the beam and particularly the slat, when this is wooden.

[0013] The presence of the, or each hollow will also reduce the surface area of parts of the slot in contact with the slat (all other dimensions being equal). This has the effect of increasing the force in the engagement between these contact surfaces, which helps to secure the slat within the slot.

[0014] In a preferred embodiment of the invention, there are at least two wedges, and a first one of the wedges is driven into the clearance gap from one side of the beam and a second one of the wedges is driven into the clearance gap from an opposite side of the beam.

[0015] In one embodiment of the invention, the faces comprise at least one surface so shaped in the transverse plane perpendicular to the longitudinal direction as to encompass on three adjacent sides a hollow that extends longitudinally along the beam. Preferably, the hollow is a substantially U-shaped recess of the beam. In this case, the sides of the U are provided by the at least one plate extending between one pair of opposite sides of the beam and the base of the U is provided by the at least one plate extending between another pair of opposite sides of the beam. The beam may be provided by a U-section beam. The post may be manufactured from U-section mild steel.

[0016] In another embodiment of the invention, the faces comprise on each one of two opposite sides of the beam at least one surface so shaped in the transverse plane as to encompass on three adjacent sides a hollow that extends longitudinally along the beam. In this way, the beam is provided with a pair of hollows, the hollows extending along opposite sides of the beam. Preferably, each hollow is a substantially U-shaped recess of the beam. In this case, the beam may be provided by an I-section beam.

[0017] In one embodiment where the beam is provided with two opposing hollows, the slot intersects only one of the hollows. Alternatively, the slot may intersect both hollows. For example, where the beam is provided by an I-section beam (also called an I-beam), the slot may intersect the hollow provided on one side of the I-section. Alterna-

tively, the slot may extend through a central wall of the I-section, thereby intersecting each of the opposing hollows.

[0018] Preferably, the at least one surface encompassing the or each U-shaped recess terminates in free edges at a side of the beam.

[0019] The advantage of a U-section beam, or an I-section beam, is that the open side or sides of the beam allow water to drain away, making it easier to avoid pooling of water and corrosion or deterioration of the post or slats when the structure is used outdoors. For this reason, it is helpful if parts of the at least one surface terminate along free edges along the sides of the post. Rain water may then flow out past these free edges.

[0020] When the beam is an I-beam or a U-beam, it is preferred if the plates are substantially flat. Corners or edges between plate are preferably radiused. Adjacent plates may be oriented at right angles to one another, as viewed in the lateral plane.

[0021] When the beam is an I-beam, the I-beam will have a first plate, a second plate and a third plate. The first and second plates are, respectively, opposite first and second flanges of the I-beam and the third plate is a web of the I-beam that extends between the flanges. The two hollows provided by the I-beam extending longitudinally along the beam on opposite sides of the web and between the flanges.

[0022] Preferably, the flanges each extend at right angles from longitudinally extending lateral edges of the web.

[0023] In one embodiment having the I-beam, the first face of the first plate provides the front side of the beam and the first face of the second plate provides the rear side of the beam. The first plate the third plate each have at least one aperture, a first one of the apertures in the first plate extending fully across the first plate between the opposite right and left sides of the beam to provide the opening to the slot and a second one of the apertures in the third plate extending from the first aperture towards the second plate to provide the slot. The slot opening is then in the externally directed face of one of the flanges.

[0024] In general, each of the first and second plates of the I-beam will have a pair of opposite side edges, these side edges extending between the first and second faces of the respective plate. In another embodiment employing the I-beam, a first one of these side edges of the first and second plates provides the front side of the beam, and a second one of these side edges of the first and second plates provides the rear side of the beam. The first plate and the second plate then each have at least aperture therein, a first one of these apertures in the first plate extending to the first side edge of the first plate and a second one of these apertures in the second plate extending to the first side edge of the second plate. The first and second apertures are aligned with each other in the lateral direction between the opposite right and left sides of the beam to provide the opening to the slot, and each of the apertures extends from the respective side edge towards the third plate to provide the slot. The slot opening is then in the two plate edges providing the front of the beam.

[0025] When the beam is a U-beam, the U-beam will have a first, second and third plates. The first and second plates are, respectively, opposite first and second flanges of the U-beam and the third plate is a web of the U-beam that extends between the flanges along one longitudinally extending edge thereof. The single hollow provided by the U-beam extends longitudinally along the beam on one side of the web and between the flanges.

[0026] Preferably, the first and second plates each extend at right angles from longitudinally extending lateral edges of the third plate.

[0027] In one embodiment employing the U-beam, each of the first and second plates has one side edge and each of these side edges extends between the first and second faces of the respective plate. The side edges of the first and second plates provide the front side of the beam, and a first face of the third plate provides the rear side of the beam. The first plate the second plate each have at least one aperture therein. A first one of these apertures in the first plate extends to the side edge of the first plate and a second one of these apertures in the second plate extends to the side edge of the second plate. The first and second apertures are aligned with each other in the lateral direction between the opposite right and left sides of the beam to provide the opening to the slot, and each of the apertures extends from the respective side edge towards the third plate to provide the slot. The slot opening is then in the two plate edges providing the front of the beam.

[0028] When the beam is a box-beam, the box-beam will have a first plate, a second plate, a third plate and a fourth plate. The first and fourth plates are opposite one another with a first face of the first and fourth plates providing, respectively the front and rear sides of the beam. The second and third plates are then opposite one another with a first face of the second and third plates providing, respectively the opposite right and left sides of the beam. The second faces of each of these four plates extends longitudinally along the beam to provide one hollow inside the box-beam. Preferably, each of the four plates extends at right angles from longitudinally extending lateral edges of adjacent plates.

[0029] In one embodiment employing the box-beam the first plate, the second plate and the third plate each have at least one aperture therein. A first one of these apertures in the first plate extends fully across the first plate between the opposite right and left sides of the beam to provide the opening to the slot and a second one and a third one of these apertures in, respectively, the second and third plates extends from the first aperture towards the fourth plate to provide the slot. The slot opening is then in the externally directed face of the first plate.

[0030] When the beam is a tube, the tube may have a single substantially cylindrical plate. The first face of the plate provides the front, rear, right and left sides of the beam. The second face of the plate extends longitudinally along the beam to provide a single hollow inside the tube. Preferably, the first and second faces of such a plate are concentric.

[0031] In one embodiment employing the tube the cylindrical plate has at least one aperture therein, the aperture extending across the single plate between the opposite right and left sides of the beam to provide the opening and the slot,

[0032] In all embodiments of the invention, it is preferred if there are a plurality of apertures spaced apart longitudinally along the length of the beam. Each of the spaces apart aperture provides a set of slots, each of which has an opening leading to a slot.

[0033] Each of the openings is preferably in the same side of the beam, so that the slats all have a similar orientation in the lateral direction.

[0034] In the embodiments in which the slot opening is in the two plate edges providing the front of the beam, the slot is, in effect, divided into two separate slot portions by a gap between the free plate edges. A first one of the slot portions may be cut through a plate extending between front and rear sides of the beam and extend rearwards from the free edge of the plate. Similarly, a second one of the slot portions may be cut through another plate extending between front and rear sides of the beam and extend rearwards from the free edge of the plate. In this way, the first and second slot portions are aligned with each other so that these function as a single slot for receiving the slat.

[0035] In other embodiments of the invention, the faces comprise at least one surface so shaped in the transverse plane as to fully encompass a hollow that extends longitudinally along the beam. In this case the hollow may be a hollow interior of the beam. Preferably, such a beam is provided by a box-section beam.

[0036] The advantage of a box-section beam is that the presence plates extending around a longitudinal axis of the beam adds strength against bending, thereby allowing the use of thinner material with lighter overall weight.

[0037] Preferably, at least part of the at least one plate spanning the front and rear sides of the beam is not cut through by the slot. The advantage of this is that the mechanical integrity of the beam is not compromised by the slots, and the slats can be oriented towards the front side of the beam, and preferably extending forwards of the front side of the beam, in order to provide a pleasing visual appearance which conceals or breaks up the view of the beam from the front side of the structure.

[0038] The slot may extend substantially perpendicular to the length of the beam, whereby the secured slat extends substantially horizontally in the lateral direction when the beam is oriented substantially vertically.

[0039] Preferably, the slot is tilted downwardly towards the front side of the beam, whereby a front edge of a secured slat is sloped downwardly relative to a rear edge of the secured slat when the beam is oriented substantially vertically. In this arrangement, the sloped surface of the slat helps to drain water away from the hollow of the beam.

[0040] The slot may be tilted downwardly towards the front of the beam and may be level in the lateral direction, whereby the front and rear edges of the secured slat are substantially level in the lateral direction.

[0041] Preferably, the slot does not fully span the hollow, whereby a rear edge of the secured slat is separated from a part of at least one plate defining a rear portion of the hollow by a gap within the hollow. This arrangement helps to prevent collection of water between the slat and a rear surface of the hollow and provides a space through which services, for example an electrical cable, can be routed.

[0042] In a preferred embodiment of the invention, the slot has a slat receiving portion that extends in the insertion direction from the front side of the beam towards the rear side of the beam. The slat receiving portion may have an extent less than a width of the slat when fully received in the slot. In this way, a free edge of the slat may extend forwards from a front side of the beam. This arrangement may help to drain water away from the beam, when the front edge of the slat is sloped downwardly relative to a rear edge of the slat.

[0043] Preferably, the slot has an upper side and a lower side when the beam is oriented substantially vertically. The wedge is laterally driven into the clearance gap between a lower side of the slat and the lower side of the slot. In this way, the slat helps to shield the wedge from rainfall, when the post is mounted outdoors, and may also help to visually hide the wedge from view.

[0044] In addition, the wedge will then lift the downwardly-facing surface of the slat above the upwardly facing surface of the slot, which helps to prevent moisture from collecting beneath the slat, thereby helping to reduce the effects of corrosion or rot over time.

[0045] Preferably, the upper side of the slot has at least one spike or tooth oriented towards the lower side of the slot, the, or each, tooth being engaged with the slat when the wedge is driven into the clearance gap. The tooth helps to secure the slat in the slot. Additionally, the tooth holds the slat at a distance from the upper side of the slot, thereby providing a water drainage gap between the upper side of the slot and an upper surface of the slat.

[0046] Preferably, the lower side of the slot is provided with at least one recess, the or each recess being sized to receive and guide a corresponding wedge as the wedge is laterally driven into the clearance gap. The recess facilitates insertion of the wedge into the clearance gap, and helps to prevent movement of the wedge in the insertion direction when the slat is secured in the slot.

[0047] In a preferred embodiment of the invention, the wedge has a taper leading to the tip of the wedge, the taper being provided by opposite first and second sides of the wedge. The first side of the wedge may have a substantially straight edge that is engaged with the slat.

[0048] In one embodiment, the straight edge has a ridge extending along its length, the ridge being engaged with the slat. The ridge guides insertion of the wedge and helps to prevent subsequent movement of the slat in the insertion direction.

[0049] In another embodiment of the invention, the second side of the wedge has an edge with a series of concave scallops. In this case, when the wedge is inserted into the clearance gap, part of the plate on one side of the slot engages with the concave surface of one scallop. In this way, the scallops help to prevent the wedge from working loose in the lateral direction.

[0050] The wedge will, in general, have opposite third and fourth sides, the third and fourth sides extending between the opposite first and second sides of the wedge. The wedge may then further comprise a base portion at a thick end of the taper, the base portion being provided with a bore therethrough between the third and fourth sides of the wedge. The bore may usefully provide a gripping feature to facilitate withdrawal of the tip of the wedge from the clearance gap. For example, the bore may provide purchase for a screwdriver, or a hooked pulling tool such as those commonly used to pull tent pegs from the ground. In this way, the wedge can be easily removed.

[0051] Preferably, the beam is of a metallic material. Preferably, the slat is a wooden plank. For example, the beam may be manufactured from steel or another metal, such that the at least one plate is of sufficient strength without being excessively thick and heavy.

[0052] According to a second aspect of the invention, there is provided a barrier installation as set forth in Claim **24** of the appended set of claims.

[0053] The supporting surface may be a granular base, and the footing may be a downwardly extending portion with at least one tapered tip driven into the granular base. A tapered

tip such as a spike allows the barrier installation to be supported in the ground, for example in a garden or other outdoor space. The barrier installation may comprise a single post, with at least one slat extending from both the first and second sides of the beam.

[0054] The barrier installation may comprise at least three posts with the beams of the posts being in line with one another. At least two of the slats may be in line with one another sharing one of the slots in at least one of the posts, such that an end of one slat meets an end of another slat in the hollow interior of the beam. Each slat then extends only from one side of the beam. In this way, each slot can function to align two laterally adjacent slats, these slats extending laterally away from opposite sides of the beam, such that the size of the barrier installation is not limited by the length of the slats. Furthermore, the join between the slats can be concealed in the hollow interior of the beam.

[0055] The barrier installation may comprise at least one electrical fixture mounted to the post. The electrical fixture will, in general, be provided with electrical power by an electrical cable. Such an electrical cable may be routed to extend along the length of the post from the supporting surface to the electrical fixture through the hollow interior of the beam. This arrangement helps to conceal and protect the electrical cable.

[0056] The footing may comprise a mounting plate. The mounting plate may be provided with means for affixing the plate to a supporting base, for example clearance holes for bolts.

[0057] The mounting plate may extend transversely away from the post. For example, the plate may extend in a plane perpendicular to the length of the post. In this arrangement, the post can be mounted perpendicular to a solid surface, such as a concrete floor.

[0058] In another example, the plate may extend in a plane parallel with the length of the post. In this arrangement, the post can be mounted parallel to a solid surface, such as a wall.

[0059] According to a third aspect of the invention, there is provided a method of assembling a structure for providing a physical or visual barrier, as set forth in Claim **25** of the appended set of claims.

[0060] The use of wedges facilitates easy and non-destructive assembly and disassembly of the barrier structure. In this way, a method is provided by which the slats can be rearranged or replaced as often as required.

BRIEF DESCRIPTION OF THE DRAWINGS

[0061] The invention will now be further described, by way of example only, and with reference to the accompanying drawings, in which:

[0062] FIG. **1** is a perspective view of a structure for providing a physical or visual barrier, according to a first preferred embodiment of the invention, having a post formed from a box-section beam with a hollow interior, a bottom end of which has a tapered tip for driving into the ground, and a plurality of transversely extending slats affixed in downwardly angled slots in a front side of the post;

[0063] FIG. **2** is a side view of part of the post of FIG. **1**, showing how each slot has on a lower side at least one recess and on an upper side at least one backwardly-directed tooth, and how the slat is preferably inserted into the slot from the front side of the post;

[0064] FIG. **3** is a side view of the post after the slat has been inserted into the slot and a wedge has been inserted between a lower side of the slat and one of the recesses, in order to engage an upper side of the slat with the teeth;

[0065] FIG. **4** shows a first embodiment of the wedge of FIG. **3**, the wedge having one side along which extends a ridge for engaging with the lower side of the slat, and an opposite side with a series of concave scallops;

[0066] FIG. **5** shows a second embodiment of the wedge of FIG. **3**, the wedge having one side along which extends a ridge for engaging with the lower side of the slat;

[0067] FIG. **6** shows a third embodiment of the wedge of FIG. **3**, the wedge having opposite tapering sides, each with a flat surface profile;

[0068] FIG. **7** is a perspective view from a rear side of the post of FIG. **1**, showing how the wedge of FIG. **6** is used to secure a slat within one of the slots, one of the scallops being engaged with opposite inner and outer surfaces of a side plate of the post;

[0069] FIG. **8** is a perspective view of a structure for providing a physical or visual barrier, according to a second preferred embodiment of the invention, similar to that of FIG. **1** but having a post formed from a U-section beam, the arms of the U-section facing towards a front side of the post;

[0070] FIG. **9** shows a variation of the post of FIG. **8**, having a lower mounting plate for bolting the post to a supporting surface, and at an upper end of the post a light fitting on a front plate;

[0071] FIG. **10** is a perspective view of a structure for providing a physical or visual barrier, according to a fourth preferred embodiment of the invention, similar to that of FIG. **1** but having a post formed from a I-section beam, the arms of the I-section extending between a front side and a rear side of the post;

[0072] FIG. **11** is a perspective view of a structure for providing a physical or visual barrier, according to a fifth preferred embodiment of the invention, having a post formed from a I-section beam, the arms of the I-section extending between first and second sides of the post and the slot being cut through a central plate;

[0073] FIG. **12** is a side view of the post of FIG. **11** after a slat has been inserted into each slot and wedges have been inserted between a lower side of the slat and a lower side of the slot, in order to engage an upper side of the slat with the teeth, the wedges being inserted from a side of the post and from a front side of the post;

[0074] FIG. **13** is a perspective view of a structure for providing a physical or visual barrier, according to a sixth preferred embodiment of the invention, having a post formed from a round hollow-section beam, the sides of the beam being curved around a hollow interior;

[0075] FIG. **14** shows how a series of the posts may be spanned by slats to provide a fence; and

[0076] FIGS. **15**A to **15**D show four different designs of visual barriers, each having a single post and plurality of slats having a variety of lengths to provide visually pleasing outlines.

DETAILED DESCRIPTION

[0077] FIG. **1** shows a first embodiment of a structure **1** for providing a physical or visual barrier. The structure comprises an elongate post **2** having an upper end **4** and a lower end **6**, and a plurality of slats **8**. As shown in FIGS. **2** and **3**, each of the slats **8** is secured to the post **2** by at least one

wedge **10**. The lower end **6** of the post comprises a footing **20**, which in this example is a lower end of the post terminating in a tapered tip **12**. In use, the tapered tip **12** is driven into the ground (not shown) up to a desired depth, indicated schematically by a dot-dashed line **14** on the post in FIG. **1**.

[0078] The post **2** has a main body formed by an elongate box-section beam **16**, which is most preferably metallic, for example of galvanised steel or stainless steel, and which may optionally be powder coated to provide colour. The beam **16** has a hollow interior **18** of substantially square or rectangular section, that extends the full length of the beam **16** along a longitudinal direction between the footing **20** and the upper end **4** of the post **2**.

[0079] The beam **16** comprises a front plate **21** and opposite this a rear plate **22**, and extending between the front and rear plates, a left side plate **23** and opposite this a right side plate **24**. The hollow **18** is defined by internally oriented faces of each of the four plates **21** to **24**. The front, rear and side plates **21** to **24** define corresponding front, rear, left and right sides **31** to **34** of the beam **16**. In this example, the front, rear and side plates **21** to **24** of the beam are each extend along the length of the beam. In general, the beam needs to have at least one plate spanning opposite front and rear sides of the beam in a first transverse direction and at least one plate spanning opposite left and right sides in a second transverse direction. In this example, a single plate extends transversely around the beam, thereby spanning between front and rear sides **31**, **32** and left and right sides **33**, **34** of the beam. The plates extend transversely so that internal surfaces of the plates at least partially enclose a hollow. In this case, the internal surfaces of the plate completely enclose the hollow interior **18**, such that the beam is generally tubular, preferably having a generally square or rectangular cross section.

[0080] The beam **16** is provided along its length with at least one slot, here a series of slots **28**, each of which opens up towards the front side **31** of the beam **16**. Each slot **28** extends fully across the front plate **21**, preferably in a horizontal direction, and extends across the left and right side plates **23**, **24** from the front plate **21** part way towards the rear plate **22**. Preferably, each slot **28** is angled downwards towards the front plate **21**. The front, rear and side plates of the beam preferably extend around the hollow interior **18**, as shown in FIGS. **1** and **7**, except where cut through by the slots.

[0081] As shown in FIGS. **1** to **3**, each slot **28** is arranged to receive at least one corresponding slat **8**. One slat **8** may extend continuously across the hollow interior **18** or two laterally adjacent slats **8'**, **8"** may meet or abut one another within the hollow interior **18**. The slats are arranged to extend laterally away from the right and left side plates **23**, **24**. In FIG. **1**, the structure is shown with one of the slats removed to show the empty slot.

[0082] Although the slats **8** may be inserted into the slots **28** in a lateral direction from either the left or rights sides **33**, **34**, it is more convenient if each slat is offered up from the front side **31** into an opening **30** of the slot in an insertion direction **27** from the front side **31** towards the rear side **32** of the beam **16**, as shown in FIG. **2**. Once inserted, fully or substantially fully, as shown in FIG. **3**, then the slat is secured in place by means of at least one wedge **10**.

[0083] The slats **8** in this embodiment are wooden planks, being elongate and having a width greater than their thickness. In other embodiments, the slats could be of plastic, especially recycled plastic, or metal, or other rigid material.

[0084] A main feature of the invention is the use of wedges **10** to secure the slats **8** in the slots **28**. Three embodiments of wedges **10**, **10'** and **10"** are shown in FIGS. **4** to **6**. Each wedge **10** is elongate and has a taper **15** defined by opposite first **41** and second **42** sides. The taper **15** ends in a tip **40** at one end of the wedge. Each wedge further comprises third **43** and fourth **44** sides extending along the length of the wedge between the first and second sides **41**, **42**. The distance between the third and fourth sides **43**, **44** defines a width of the wedge. To assist hammering or driving of the wedge into the clearance gap **29**, a head **11** is provided at the end of the wedge opposite the tip **40**, where the distance between the first and second sides **41**, **42** of the wedge is greatest. The head **11** of the wedge meets the second side **42** of the wedge at a ledge **46** which is preferably a right angled ledge. A bore **48** extends through the head **11** between the third and fourth sides **43**, **44** of the wedge **10**. In use, the first side **41** of the wedge is arranged to engage with a lower side **45** of a slat **8** and the second side **42** of the wedge is arranged to engage with the lower side **36** of a slot **28**.

[0085] In a one embodiment, shown in FIG. **4**, the second side **42** of the wedge **10** is provided with a series of concave scallops **52**. The scallops **52** extend parallel to one another between the third and fourth sides **43**, **44** of the wedge, perpendicular to the length of the wedge. Additionally, or alternatively, as shown in the embodiment **10'** in FIG. **5**, the first side **41** of the wedge **10** comprises a ridge **50** extending along the length of the wedge. The ridge **50** is arranged to engage with the lower side **45** a slat **8**. Alternatively, the wedge may have substantially flat sides **41** to **44**, as in the embodiment **10"** shown in FIG. **6**.

[0086] Referring again to FIGS. **2** and **3**, each slot **28** has an upper side **35** and a lower side **36** where the slot passes through each side plate **23**, **24**. The upper and lower sides **35**, **36** are substantially parallel to one another. A width W of the slot **28** is defined by the minimum distance between substantially parallel opposed portions of the upper and lower sides **35**, **36** of the slot **28** in each side plate **23**, **24**. The width of the slot is sized to receive the thickness of one of the slats **8** with a clearance gap **29** between the lower sides **36** of the slot and the lower side **45** of the slat **8**, as can be seen in FIG. **3**.

[0087] The upper sides **35** of each slot **28** are provided with at least one backwardly-directed tooth **38** which points towards the lower side **36** of the slot and away from the opening **30**. Each tooth **38** is arranged to engage with an upper side **47** of a slat **8** in use. Additionally, the or each tooth **38** holds the slat **8** at a distance from the upper side **35** of the slot, thereby providing a water drainage gap **37** between the upper side of the slot and the upper side **47** of the slat **8**.

[0088] As can be seen in FIGS. **2** and **3**, each lower side **36** of each slot **28** is provided with a pair of recesses **54** extending into the side plates **23**, **24** away from the upper side **35** of the slot. Each recess **54** has sides **55** and a base **56**, the distance between the sides **55** being sized to accommodate the width of a wedge **10**. FIG. **3** shows wedges **10** in the recesses **54**, with a slat **8** received in each slot.

[0089] In use, one slat **8** (or optionally two laterally adjacent slats **8'**, **8"**, which meet within the hollow interior **18** of the beam **16**) is inserted into each slot **28**. A portion of each slat is inserted in the insertion direction **27** into a slot,

preferably from the front side **41** of the beam as shown in FIG. **2**, such that the slat extends through the side plates **23**, **24** away from the left and/or right sides **33**, **34** of the beam. The slat therefore extends in at least one of two opposite second transverse directions **39**, **39'** which are lateral directions with respect to the front side of the beam and the longitudinal direction of the beam, and which are also in this example substantially perpendicular to the insertion direction **27** along which each slat is preferably inserted into the slot.

[0090] To secure the slat **8** in the slot **28**, the tip **40** of a wedge **10** is inserted into the clearance gap **29** between the lower side **36** of the slot and the lower side **45** of the slat **8**, on each side of the beam. Each wedge is driven from the left or right side **33**, **34** of the beam **2** towards the hollow interior **18**. As shown in FIGS. **3** and **7**, each wedge is guided by one of the recesses **54**. Driving of the wedges presses the first side **41** of each wedge into engagement with the lower side **45** of the slat, which in turn presses the upper side **47** of the slat **8** into engagement with the or each tooth **38** on the upper side **35** of the slot. Each tooth digs in to the upper side **47** of the slat and helps secure the slat in the slot. The second side **42** of each wedge engages with the base **56** of the corresponding recess **54** in the lower side **36** of the slot.

[0091] Where the second side **42** of the wedge **10** has scalloped edges **52**, the base **56** of the recess **54** engages with one of the scallops, as shown in FIG. **7**. In this way, the wedge may be secured to prevent movement of the wedge in one or the other of the second transverse directions **39**, **39'**. Movement of each wedge towards the hollow interior **18** of the beam **16** is limited either by the size of the clearance gap **29**, or by the ledge **46** which may abut the side plate **23**, **24** at the base **56** of the recess **54**.

[0092] To remove the slats **8**, the wedges **10** may be pulled out of the gap **29** in one or the other of the second transverse directions **39**, **39'**, away from the hollow interior **18** of the beam **16**. To this end, the bore **48** in the head of each wedge may be engaged with a tool to aid removal of the wedge from the slot **28**. It should be noted that the use of wedges to secure the slats **8** allows the slots to accommodate slats having different thicknesses, by adjusting the extent to which the wedge is driven towards the hollow interior **18**.

[0093] In another embodiment (not shown), only one recess **54** may be provided in each lower side **36** of each slot **28**. In this case, the position of the recess in the left side plate **23** is offset from the position of the recess in the opposing right side plate **24**, such that when wedges are driven from opposing sides of the same slot **28** the tips **40** of the wedges do not collide in the hollow interior **18** of the beam **16**.

[0094] It should be noted that the positioning of the wedges **10** beneath the slats **8** helps to shield the wedges from rainfall, when the post **2** is mounted outdoors, and may also help to hide the wedges from view.

[0095] It should also be noted that the water drainage gap **37** allows water to drain between the upper side **35** of the slot **28** and the upper side **47** of the slat **8**, in embodiments with or without a front plate **21**.

[0096] FIGS. **8** and **9** show second and third embodiments **101**, **201** of the invention in which features which are the same as in the first embodiment **1** are indicated with the same reference numerals. Features of the second and third embodiments which are similar to corresponding features of the first embodiment are indicated with reference numerals incremented by, respectively **100** and **200**.

[0097] In the second embodiment **101** the beam **116** does not have a front plate and so the beam presents an opening **49** that extends along the front side **31** of the beam **116** fully between the opposite upper and lower ends **104**, **106** of the beam. The front side **31** of the beam **116**, **216** is therefore defined by free edges **25**, **26** of the side plates **23**, **24** such that the beam has a U-shaped cross section, as shown in FIG. **8**.

[0098] The post **202** of the third embodiment **201** is similar to that **102** the second embodiment **101** except that the beam **216** has a reinforcing strap **66** at the upper end **204** of the beam **216**. The front side **31** of the beam **216** present an opening **149** between the reinforcing plate and the lower end **206** of the beam **216**.

[0099] In both the second and third embodiments **101**, **102**, the beam **116**, **216** comprises a rear plate **22**, and extending forwards of the rear plate, a left side plate **23** and opposite this a right side plate **24**. In each case, the hollow **18** is therefore defined by internally oriented faces of each of the three plates **22** to **24**, which therefore partially enclose the hollow.

[0100] Because there is no front plate in the second and third embodiments **101**, **201**, each slot **128** is divided into separate slot portions **128'**, **128"**, **228'**, **228"** by a gap between the free edges **25**, **26**, **125**, **126** of the side plates. One of the slot portions **128'**, **228'** is cut through the left side plate **23** and extends rearwards from the free edge **25**, **125** of the left side plate. Similarly, a corresponding slot portion **128"**, **228"** is cut through the right side plate **24** and extends rearwards from the free edge **26**, **126** of the right side plate. In this way, the two slot portions **128'**, **128"**, **228'**, **228"** are aligned with each other so that these function as a single slot **128**, **228** for receiving a slat **8**, as can be seen in FIGS. **8** and **9**. In this case, where there is only one plate extending between left and right sides **33**, **34** of the beam, the beam **116**, **216** may be provided by a U-section beam.

[0101] The post **102** of the second embodiment **101** has a footing **120** with a tapered tip **112** which has the same taper as the first embodiment 1.

[0102] In the third embodiment **201**, the footing **220** comprises a mounting plate **60** extending transversely away from the lower end **206** of the post **202**. In one example, shown in FIG. **9**, the mounting plate **60** is a substantially rectangular plate extending in a plane perpendicular to the length of the post **202**. Mounting holes (not shown) are provided adjacent to each corner **57** of the mounting plate **60**, such that the mounting plate can be secured to a solid surface by fasteners. In the example of FIG. **9**, the fasteners are bolts, the heads **62** only of which are shown in FIG. **9**. Although not shown, the bolts are conventional steel bolts each having a shaft that extends through a corresponding hole in the mounting plate **60** to engage with a threaded sleeve which may, for example, be set in a concrete base. In other examples, screws, pins, pegs or other suitable fasteners could be used. In another alternative (not shown), a mounting plate may extend in a plane parallel to the length of the post **202**, such that the barrier structure **201** can be secured to a vertical supporting surface, such as a wall.

[0103] In the embodiments of FIGS. **1** and **8**, the footing **20**, **120** includes the downwardly pointing tapered tip **12** comprising a part of the rear plate **22** and the side plates **23**, **24**. The rear plate **22** extends further towards the lower end **6**, **106** of the post **2**, **102** than the front plate **21**. In these cases, the side plates **23**, **24** are tapered at the lower end **6**,

106 of the post 2, 102 such that a lower edge 82 of each side plate 23, 24 extends downwardly and towards to a bottom edge 81 of the rear plate 22.

[0104] FIGS. 10 to 13 show fourth, fifth and sixth embodiments 301, 401, 501 of the invention in which features which are the same as in the first embodiment 1 are indicated with the same reference numerals. Features of these embodiments which are similar to corresponding features of the first embodiment are indicated with reference numerals incremented by, respectively 300, 400 and 500.

[0105] In the fourth embodiment 301 of the invention, the beam 316 has only one plate extending between left and right sides 33, 34 of the beam, which in this case comprises a middle or central plate 17. As shown in FIG. 10, the central plate 17 extends between left and right side plates 323, 324 of the beam, part way between the front and rear sides 31, 32 of the beam. In this way, the front and rear sides 31, 32 of the beam 316 are defined by free edges of the side plates 323, 324. The front side 31 of the beam is defined by front edges 325, 326 of the side plates 323, 324 and the rear side of the beam is defined by free edges 325', 326'. A pair of hollows 318', 318" is thereby provided between the side plates 323, 324, with one hollow on either side of the central plate 17. Each of the hollows 318', 318" is defined by internally oriented faces of each of the three plates 17, 323, 324, which therefore partially enclose the hollow.

[0106] As in the second and third embodiments 101, 201, there is an opening 249 between front edges 325, 326 of the side plates 323, 324 which in this case leads to a front one 318' of the hollows.

[0107] The beam 316 is provided with slots 328 opening at the front side 31 of the beam. Since there is no front plate, each slot 328 is divided into slot portions 328', 328" by a gap between the free edges 325, 326 of the side plates. One of the slot portions 328' is cut through the left side plate 323 and extends rearwards from the free edge 325 of the left side plate. Similarly, a corresponding slot portion 328" is cut through the right side plate 324 and extends rearwards from the free edge 326 of the right side plate. In this way, the two slot portions 328', 328" are aligned with each other so that these function as a single slot 328 for receiving a slat 8, as can be seen in FIG. 10. In this case, having a central plate 17 instead of front and rear plates, the beam 316 may be provided by an I-section beam.

[0108] In this fourth embodiment, the footing 320, comprises a tapered tip 312. As shown in FIG. 10, the central plate 17 extends further towards the lower end 306 of the post 302 than the side plates 323, 324. The side plates 323, 324 are tapered at the lower end 306 of the post 302 such that a lower edge 82 of each side plate 323, 324 extends downwardly and towards to a bottom edge 381 of the central plate 17.

[0109] Although not shown, in the second, third and fourth embodiments 101, 201, 301, the slats 8, 8', 8" are secured using the same wedges 10 and technique as described above in relation to the first embodiment 1. The slots 128, 228, 328 may also have any of the same arrangements of teeth 38 and recesses 54 as described above.

[0110] In the fifth embodiment 401 of the invention, shown in FIG. 11, the beam 416 does not have side plates, instead having a middle or central plate 117. The central plate 117 extends between front and rear plates 421, 422, part way between the left and right sides 33, 34 of the beam 416. In this way, the front and rear sides 31, 32 of the beam are defined by the front and rear plates 421, 422. The left and right sides 33, 34 of the beam are defined by free edges of the front and rear plates 421, 422. The left side 33 of the beam is defined by left edges 71, 72 of the front and rear plates 421, 422. and the right side of the beam is defined by right edges 71', 72' of the front and rear plates 421, 422. A pair of hollows 418', 418" is thereby provided between the front and rear plates 421, 422, with one hollow on either side of the central plate 117. Each of the hollows 418', 418" is defined by internally oriented faces of each of the three plates 117, 421, 422.

[0111] The beam 416 is provided with slots 428 opening at the front side 31 of the beam 416. FIG. 11 shows the structure with one of the slats 8 removed to show the empty slot 428. Each slot is cut through the front plate 421 and through the central plate 117. Each slot extends upwardly and towards the rear side 32 of the beam. In this way, each slot intersects both hollows 418, 418".

[0112] FIG. 12 shows a side view of the beam 416, showing a slat 8 secured in each slot 428. In a similar manner to the first embodiment 1, the lower side 436 of each slot is provided with a recess 54 for guiding a wedge 10 and the upper side 435 of each slot is provided with teeth 38 for engaging with the upper surface 47 of a slat 8.

[0113] Additionally, in this fifth embodiment 401, the slot 428 is arranged to receive wedges 10 in the insertion direction 27, where the slot cuts through the front plate 421. An opening 430 of the slot 428 is defined where the slot is cut through the front plate 421. A lower side 73 of the opening is provided with two recesses 154 cut into the front plate 421, as shown in FIG. 11. The recesses 154 are spaced apart on the lower side 73 of the opening, such that the central plate meets the front plate between the recesses. Each recess 154 in front plate 421 is shaped to accommodate the width of a wedge 10.

[0114] To secure a slat 8 in a slot 428, a wedge is driven into the clearance gap 29 in one of the second transverse directions, guided by the recess 54 in the central plate 117, in a similar manner to the first embodiment 1. Additionally, wedges 10 are driven through a clearance gap 129 between the lower side 45 of a slat and the lower side 73 of the opening 430. Each additional wedge 10 is driven in the insertion direction 27 from the front side 31 of the beam 416 and is guided by one of the recesses 154. In FIG. 12, a wedge 10 can be seen extending towards the rear side of the beam 416. The tip 40 of the wedge extends towards the rear plate 422, underneath the slat 8.

[0115] In this fifth embodiment, the footing 420 comprises a tapered tip 412. As shown in FIG. 11, the central plate 117 extends further towards the lower end 406 of the post 402 than the front and rear plates 421, 422. The front and rear plates 421, 422 are tapered at the lower end 406 of the post 402 such that lower edges 482 of the front and rear plates 421, 422 extend downwardly and taper towards to a bottom edge 481 of the central plate 117.

[0116] FIG. 13 shows a sixth embodiment 501 of the invention, in which there is a single plate 521 that is curved to extend continuously around all four sides 31 to 34 of the beam 516. The plate 521 is continuous and curved around a hollow interior 518 such that the beam is generally cylindrical. In this embodiment, the beam 516 has a generally circular cross-section and may be provided by a round hollow-section beam. The hollow 518 is defined by a single continuous internally oriented face of the plate 521.

[0117] The beam is provided with slots **528** opening at the front side **31** of the beam. Although not shown, in this embodiment, the slats **8** are secured using the same wedges **10** and technique as described above in relation to the first embodiment. The slots **528** may also have any of the same arrangements of teeth **38** and recesses **54** as described above.

[0118] In this sixth embodiment, the footing **520** comprises a tapered tip **512**. As shown in FIG. **13**, the rear side **32** of the plate **521** extends further towards the lower end **506** of the post **502** than the left and right sides **33**, **34** of the plate **521**. The left and right sides of the plate **521** are tapered towards the lower end **506** of the post **502** such that a lower edge **582** of the plate **521** extends downwardly and towards to a bottom edge **581** of the plate **521**.

[0119] FIG. **14** shows how the post **2** and slats **8** of the first embodiment **1** may be used to construct a barrier installation **80**, having at least two posts spanned by slats. Here, the barrier installation is a fence **90** that extends over the ground **92**. Each slat **8** is received in a slot **28** or slot portion **28'**, **28"** in at least two posts **2**. For example, as shown in FIG. **14**, laterally adjacent slats **8'**, **8"** in line with one another can share a common slot **28**, such that an end of one slat **8'** meets an end of another slat **8"** in the hollow interior **18** of the beam **16**. Each slat **8'**, **8"** then extends only through a slot portion **28**, **28"** in one of the side plates **23**, **24**. In this way, each slot **28** can function to join two slats **8'**, **8"** together, such that the size of the barrier installation **80** can be extended to provide a fence and is not limited by the length of the slats **8**. The join between the slats **8'**, **8"** may also be concealed in the hollow interior **18**. Although not shown, the posts of any of the above-described embodiments may similarly be used to construct a barrier installation.

[0120] In embodiments where the footing comprises a tapered tip, the tapered tip is arranged to be driven into a granular base such as the ground, in order to support the post in an upright position, thereby providing a barrier installation. For example, referring to FIGS. **1**, **8**, **10**, **11** and **15**A to **15**D, the tapered tip **12**, **112**, **312**, **412** for the footing **20**, **120**, **320**, **420** is arranged to be driven into a granular base such as the ground **92** in order to support the post **2**, **102**, **302**, **402** in an upright position. In use, the tapered tip would be driven into the granular base sufficiently far to ensure a stable orientation of the post, for example up to a level as indicated by the dot-dashed lines **14**, **114**, **314**, **414**. The granular base may be soil, sand, gravel or other non-consolidated particulate matter. Although not shown, the footing could, alternatively, be set in concrete.

[0121] In all embodiments of the invention, the post may provide support for additional features, e.g. electrical fixtures. For example, in the embodiment of FIG. **9**, a light fitting **64** is, optionally, provided on the reinforcing strap **66** at the upper end **204** of the post **202**. The hollow **18** of the beam **216** provides a space through which a cable **68** for an electrical fixture can be routed. In this way, the cable **68** may be concealed and protected. The cable may be routed through a hole **70** where one of the side plates **23**, **24** meets the mounting plate **60**.

[0122] The use of wedges **10** allows the slats **8** to be removed and repositioned as desired. The slats **8** may therefore be arranged into a variety of designs, examples of which are shown in FIGS. **15**A to **15**D. In addition, the slats need not all be of the same length, but can be varied to change the shape of the outline provided by the barrier structure **1**. In this way, visually pleasing designs may be created.

[0123] The invention therefore provides a convenient and versatile structure for providing a physical or visual barrier, and also a method of assembling such a structure, which may be used as part of a barrier installation or as a visually pleasing feature, for example in ornamental gardens.

1. A structure for providing a physical or visual barrier, comprising:

at least one post for mounting to a supporting surface, a lower end of said post comprising a footing for securing the post to the supporting surface and the post further comprising an elongate beam, the beam extending in a longitudinal direction upwardly from the footing on which said beam is supported;

at least one wedge;

at least one slat, the or each slat being affixed to said beam and extending in a lateral direction, the lateral being transverse to the longitudinal direction;

wherein

said beam comprises at least one plate, the or each plate extending in the longitudinal direction and having opposite first and second faces, at least one of said faces defining a hollow that extends longitudinally along the beam;

at least one plate has an aperture therein extending between said opposite first and second faces of said plate, said aperture presenting an opening on a front side of the beam, and said aperture providing a slot that extends from the front side of the beam part way towards an opposite rear side of the beam to present a slot configured to receive through the opening and into said hollow a portion of said slat when said slat is inserted into the slot in an insertion direction from the front side of the beam;

said aperture is open towards opposite right and left sides of the beam whereby said inserted slat extends away from the slot in opposite first and second lateral directions, said lateral directions being substantially orthogonal to the insertion direction; and

said slot has a width in a plane parallel to the longitudinal direction that provides a sufficient clearance gap with said inserted slat whereby a tip of said wedge may, in use, be driven into the clearance gap in one of said lateral directions to secure said slat to the or each plate whereby said slat is affixed to said beam.

2. The structure according to claim **1**, in which said beam has a substantially square or rectangular envelope in a plane transverse to the longitudinal direction.

3. The structure according to claim **2**, in which the beam is an I-beam, the I-beam having a first plate, a second plate and a third plate, the first and second plates are, respectively, opposite first and second flanges of the I-beam and the third plate is a web of the I-beam that extends between said flanges, wherein there are two hollows, said hollows extending longitudinally along the beam on opposite sides of the web and between said flanges.

4. The structure according to claim **3**, in which: the first face of the first plate provides the front side of the beam and the first face of the second plate provides the rear side of the beam; and the first plate the third plate each have said aperture therein, a first one of said apertures in the first plate extending fully across the first plate between the opposite

right and left sides of the beam to provide said opening and a second one of said apertures in the third plate extending from the first aperture towards the second plate to provide said slot.

5. The structure according to claim **3**, in which:

each of the first and second plates has a pair of opposite side edges, said side edges extending between the first and second faces of the respective plate;

a first one of said side edges of the first and second plates provides the front side of the beam, and a second one of said side edges of the first and second plates provides the rear side of the beam; and

the first plate and the second plate each have said aperture therein, a first one of said apertures in the first plate extending to the first side edge of the first plate and a second one of said apertures in the second plate extending to the first side edge of the second plate and said first and second apertures being aligned with each other in the lateral direction between the opposite right and left sides of the beam to provide said opening, and each of said apertures extending from the respective side edge towards the third plate to provide said slot.

6. The structure according to claim **2**, in which the beam is a U-beam, the U-beam having a first plate, a second plate and a third plate, the first and second plates are, respectively, opposite first and second flanges of the U-beam and the third plate is a web of the U-beam that extends between said flanges along one longitudinally extending edge thereof, wherein there is one hollow, said hollow extending longitudinally along the beam on one side of the web and between said flanges.

7. The structure according to claim **6**, in which:

each of the first and second plates has one side edge, each of said side edges extending between the first and second faces of the respective plate;

the side edges of the first and second plates provide the front side of the beam, and a first face of the third plate provides the rear side of the beam; and

the first plate the second plate each have said aperture therein, a first one of said apertures in the first plate extending to the side edge of the first plate and a second one of said apertures in the second plate extending to the side edge of the second plate and said first and second apertures being aligned with each other in the lateral direction between the opposite right and left sides of the beam to provide said opening, and each of said apertures extending from the respective side edge towards the third plate to provide said slot.

8. The structure according to claim **2**, in which:

the beam is a box-beam, the box-beam having a first plate, a second plate, a third plate and a fourth plate;

the first and fourth plates are opposite one another with a first face of the first and fourth plates providing, respectively the front and rear sides of the beam;

the second and third plates are opposite one another with a first face of the second and third plates providing, respectively the opposite right and left sides of the beam;

the second faces of each of said plates extends longitudinally along the beam to provide one hollow inside the box-beam.

9. The structure according to claim **8**, in which the first plate, the second plate and the third plate each have said aperture therein, a first one of said apertures in the first plate extending fully across the first plate between the opposite right and left sides of the beam to provide said opening and a second one and a third one of said apertures in, respectively, the second and third plates extending from the first aperture towards the fourth plate to provide said slot.

10. The structure according to claim **1**, in which the beam is a tube, the tube having a single substantially cylindrical plate; the first face of said plate provides the front, rear, right and left sides of the beam, and the second face of said plate extends longitudinally along the beam to provide one hollow inside the tube.

11. The structure according to claim **10**, in which said plate has said aperture therein, the aperture extending across said plate between the opposite right and left sides of the beam to provide said opening and said slot.

12. The structure according to claim **1**, in which there are at least two wedges, and a first one of said wedges is driven into said clearance gap from the left side of the beam and a second one of said wedges is driven into said clearance gap from the right side of the beam.

13. The structure according to claim **1**, in which said slot extends substantially perpendicularly to the longitudinal direction, whereby said secured slat has opposite faces oriented substantially perpendicularly to the longitudinal direction.

14. The structure according to claim **1**, in which said slot is tilted downwardly towards the opening on the front side of the beam, whereby a front edge of said secured slat is sloped downwardly relative to a rear edge of said secured slat when the beam is oriented substantially vertically.

15. The structure according to claim **1**, in which the slot does not fully intersect said hollow, whereby a rear edge of the secured slat is separated from said at least one face defining said hollow.

16. The structure according to claim **1**, wherein the slot has a slat receiving portion that extends in the insertion direction from the front side of the beam towards the rear side of the beam, said slat receiving portion has an extent in the insertion direction less than a width of said slat when fully received in the slot, whereby a free edge of said slat extends forwards from the front side of said beam.

17. The structure according to claim **1**, in which the slot has an upper side and a lower side when the beam is oriented with the longitudinal direction being substantially vertical, and said wedge is seated in said clearance gap between a lower side of the slat and the lower side of said slot.

18. The structure according to in claim **17**, in which the upper side of the slot is provided with at least one tooth oriented towards the lower side of the slot, said tooth being engaged with the slat when said wedge is driven into the clearance gap.

19. The structure according to claim **18**, in which the lower side of the slot is provided with at least one recess, said recess being sized to receive and guide said wedge as said wedge is driven into said clearance gap.

20. The structure according to claim **1**, in which said wedge has a taper leading to the tip of said wedge, the taper being provided by opposite first and second sides of said wedge, the first side of said wedge having a substantially straight edge that is engaged with the slat when said wedge is driven into said clearance gap.

21. The structure according to claim **20**, in which said straight edge has a ridge extending along its length, the ridge being engaged with the slat when said wedge is driven into said clearance gap.

22. The structure according to claim **20**, in which the second side of said wedge has an edge with a series of concave scallops, one side of the slot being seated within one scallop when said wedge is driven into said clearance gap.

23. The structure according to claim **20**, in which said wedge has opposite third and fourth sides, the third and fourth sides extending between the opposite first and second sides of said wedge, and said wedge further comprises a base portion at a thick end of the taper, the base portion being provided with a bore therethrough between the third and fourth sides of the wedge, the bore providing a gripping feature to facilitate withdrawal of the tip of the wedge from said clearance gap.

24. A barrier installation comprising a structure, the structure comprising at least one post, a lower end of said post comprising a footing and an elongate beam, the beam extending in a longitudinal direction upwardly from the footing on which said beam is supported;

at least one wedge;

at least one slat, the or each slat being affixed to said beam and extending in a lateral direction, the lateral being transverse to the longitudinal direction;

wherein

said beam comprises at least one plate, the or each plate extending in the longitudinal direction and having opposite first and second faces, at least one of said faces defining a hollow that extends longitudinally along the beam;

at least one plate has an aperture therein extending between said opposite first and second faces of said plate, said aperture presenting an opening on a front side of the beam, and said aperture providing a slot that extends from the front side of the beam part way towards an opposite rear side of the beam to present a slot configured to receive through the opening and into said hollow a portion of said slat when said slat is inserted into the slot in an insertion direction from the front side of the beam;

said aperture is open towards opposite right and left sides of the beam whereby said inserted slat extends away from the slot in opposite first and second lateral directions, said lateral directions being substantially orthogonal to the insertion direction; and

said slot has a width in a plane parallel to the longitudinal direction that provides a sufficient clearance gap with said inserted slat whereby a tip of said wedge may, in use, be driven into the clearance gap in one of said lateral directions to secure said slat to the or each plate whereby said slat is affixed to said beam, and wherein the barrier installation further comprises a supporting surface, the structure being mounted to the supporting surface by the footing, said slat extending away from at least one of the right and left sides of the beam in the lateral direction to provide said physical or visual barrier.

25. A method of assembling a structure for providing a physical or visual barrier, the structure comprising at least one post, a lower end of said post comprising a footing and an elongate beam, the beam extending in a longitudinal direction upwardly from the footing on which said beam is supported;

at least one wedge;

at least one slat, the or each slat being affixed to said beam and extending in a lateral direction, the lateral being transverse to the longitudinal direction;

wherein

said beam comprises at least one plate, the or each plate extending in the longitudinal direction and having opposite first and second faces, at least one of said faces defining a hollow that extends longitudinally along the beam;

at least one plate has an aperture therein extending between said opposite first and second faces of said plate, said aperture presenting an opening on a front side of the beam, and said aperture providing a slot that extends from the front side of the beam part way towards an opposite rear side of the beam to present a slot configured to receive through the opening and into said hollow a portion of said slat when said slat is inserted into the slot in an insertion direction from the front side of the beam;

said aperture is open towards opposite right and left sides of the beam whereby said inserted slat extends away from the slot in opposite first and second lateral directions, said lateral directions being substantially orthogonal to the insertion direction; and

said slot has a width in a plane parallel to the longitudinal direction that provides a sufficient clearance gap with said inserted slat whereby a tip of said wedge may, in use, be driven into the clearance gap in one of said lateral directions to secure said slat to the or each plate whereby said slat is affixed to said beam, wherein the method comprises inserting part of said slat into said slot in the insertion direction, inserting the tip of at least one wedge into the clearance gap between said inserted slat and one side of the slot, and driving the wedge into the clearance gap in one of said lateral directions such that the wedge presses the slat into engagement with one side of the slot, the slat being releasable from said slot by removal of the wedge from the clearance gap.

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