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(56) Documents Cited:
GB 2300435 A **CA 001055289 A**
DE 019511906 A1 **KR 200464598 Y1**
US 20040012007 A1

(58) Field of Search:
INT CL **E04G, E04H, G09F**

(54) Title of the Invention: **Hoarding and method of assembly**
Abstract Title: **Hoarding system for uneven ground**

(57) A hoarding system (300) comprises a plurality of upright supports (310), a plurality of panels (330), at least one upper edge channel member (340) for receiving an upper edge of at least one of the panels, at least one lower edge channel member (350) for receiving a lower edge of at least one of the panels, and at least one intermediate support rail (360) for supporting at least one of the panels at a point between its upper and lower edges, the support rail and the upper and lower edge channel members each being arranged in use to be mounted to at least one of the upright supports.

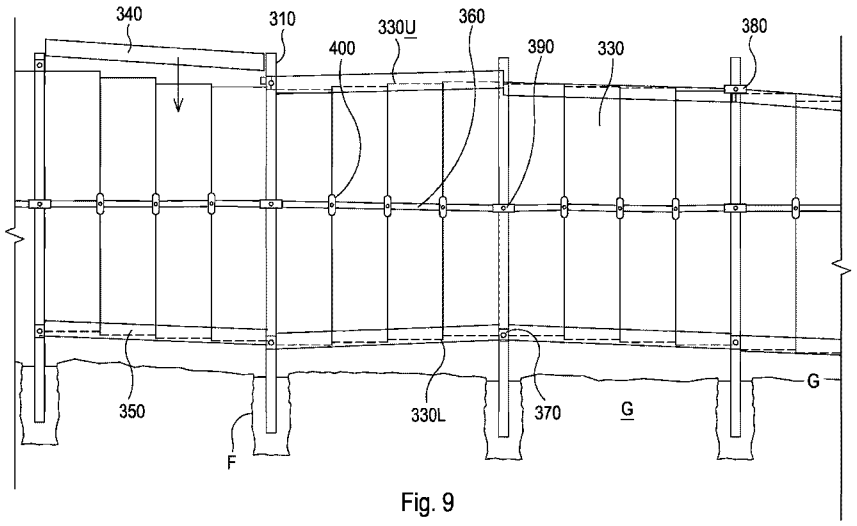


Fig. 9

GB 2605200 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

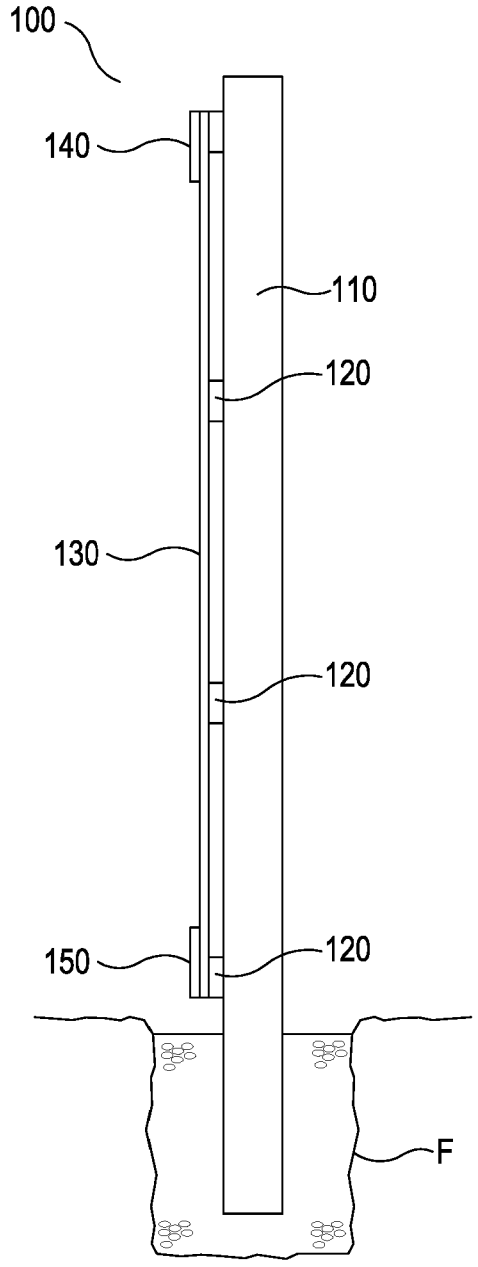


Fig. 1a
(PRIOR ART)

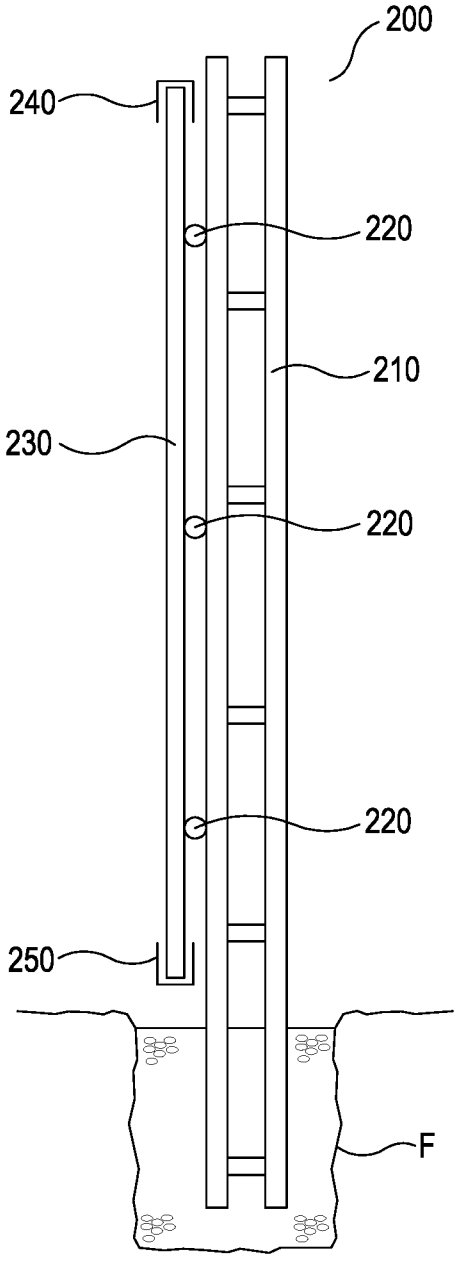


Fig. 1b
(PRIOR ART)

22 06 22

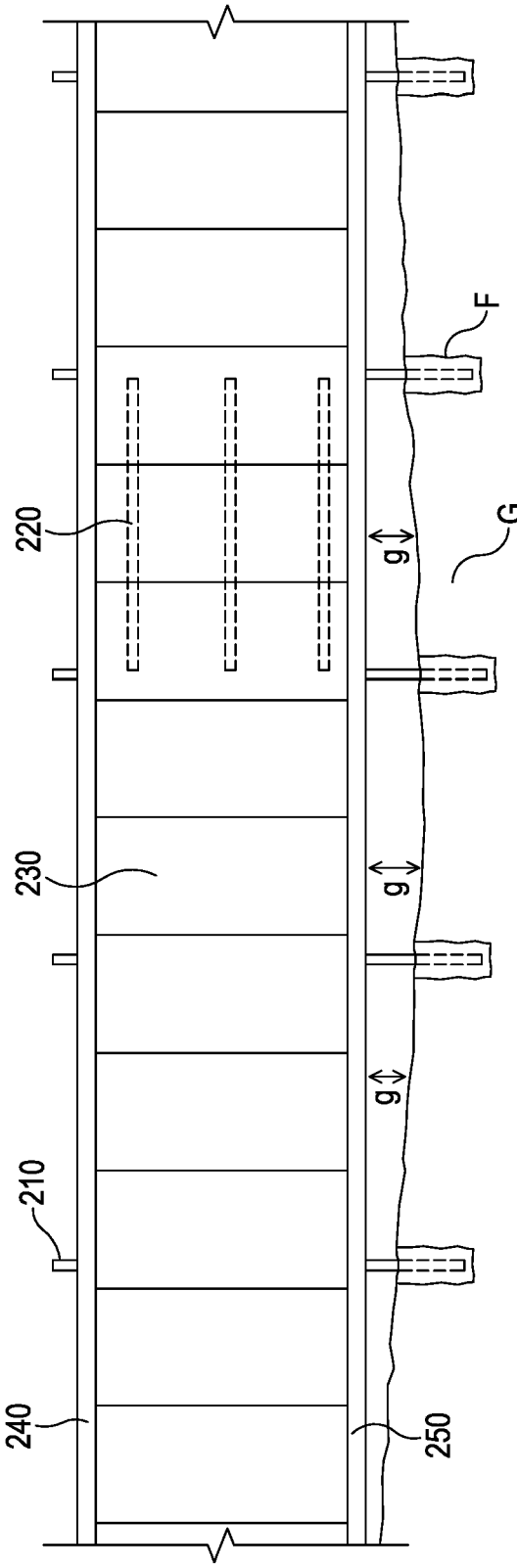


Fig. 2 (PRIOR ART)

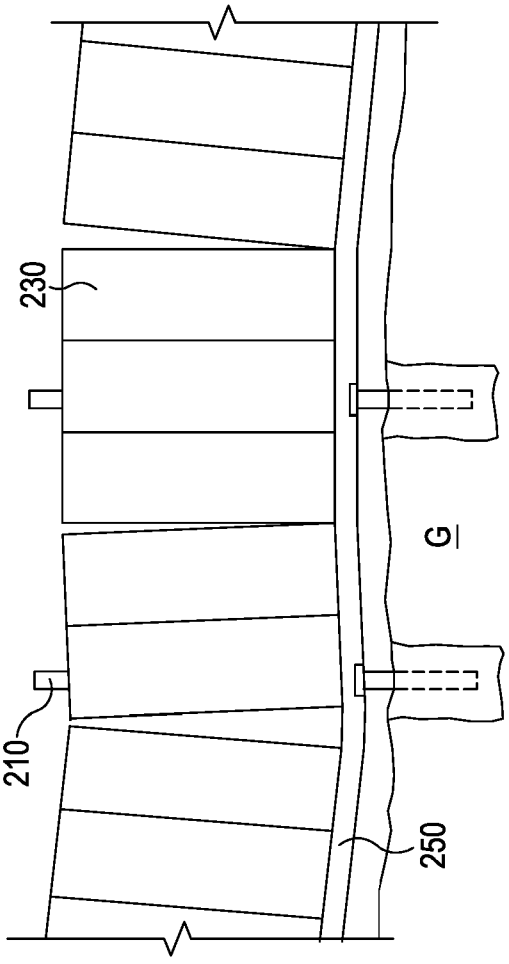


Fig. 3 (PRIOR ART)

22 06 22

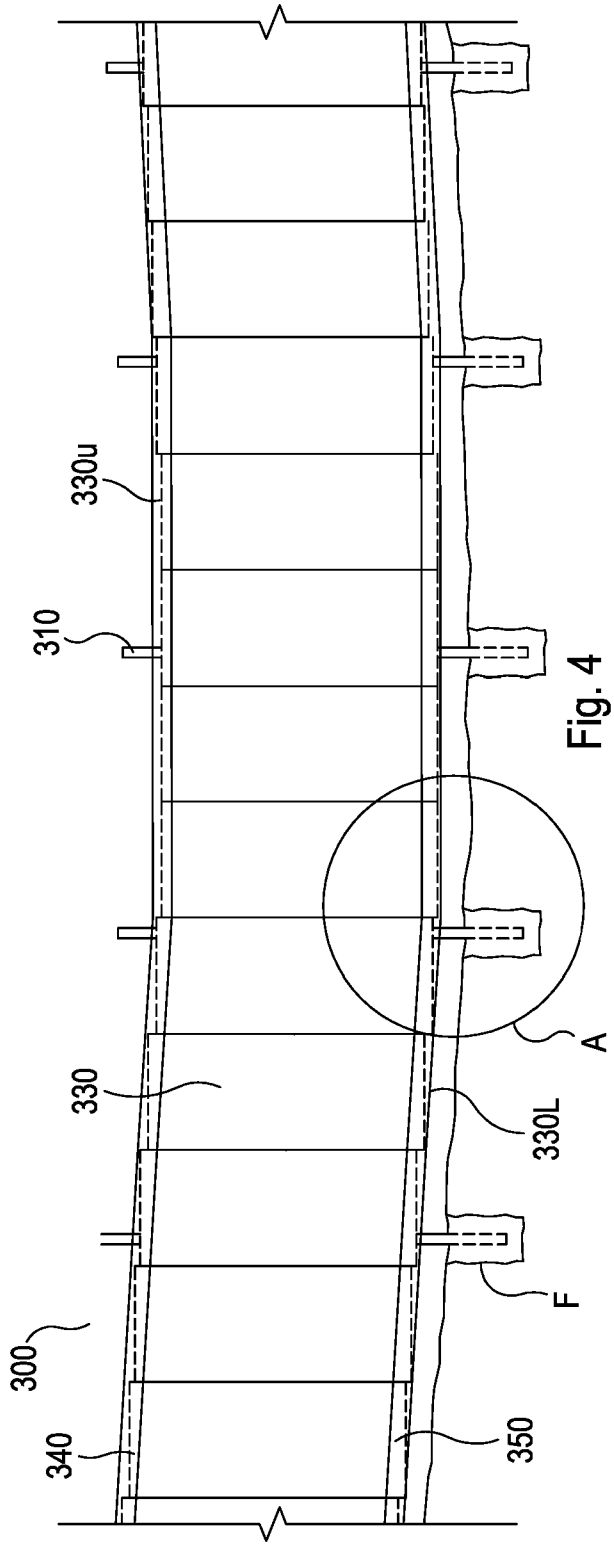


Fig. 4

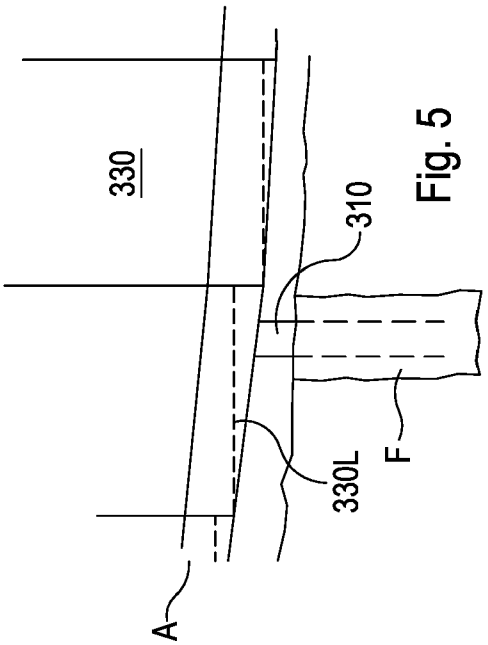


Fig. 5

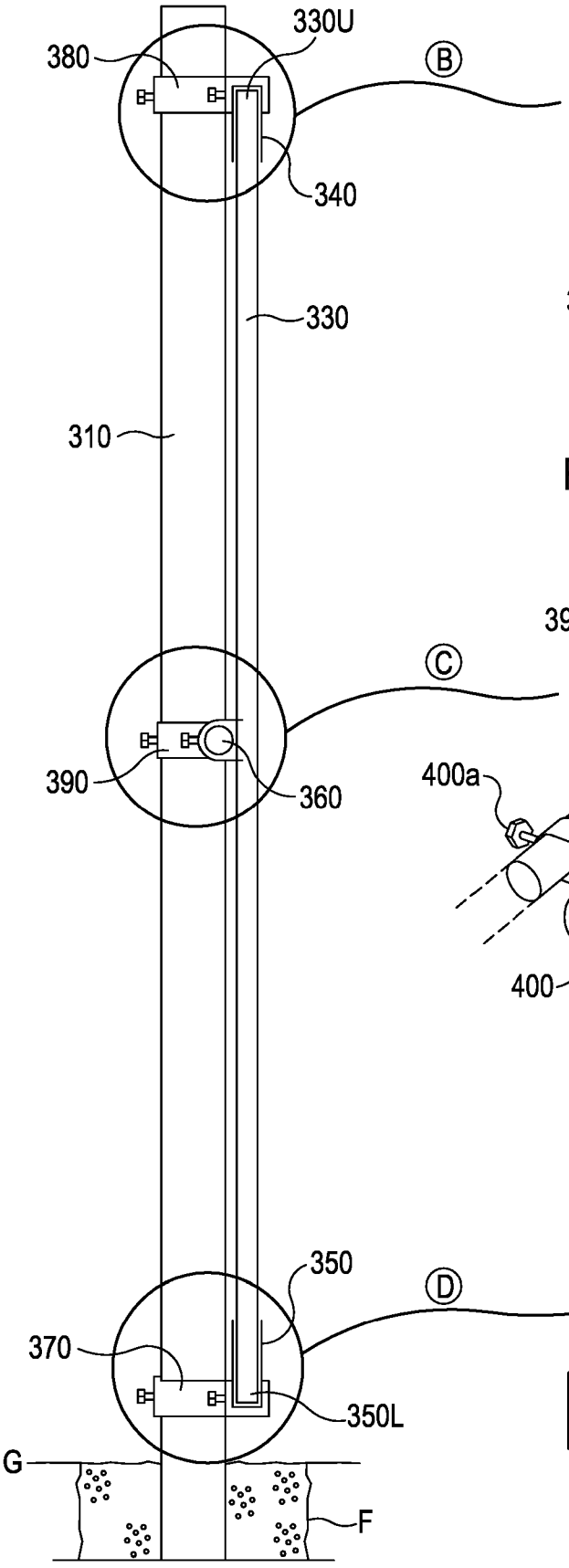


Fig. 6a

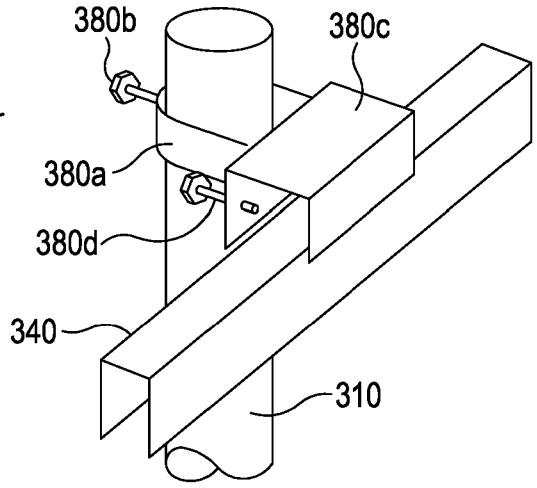
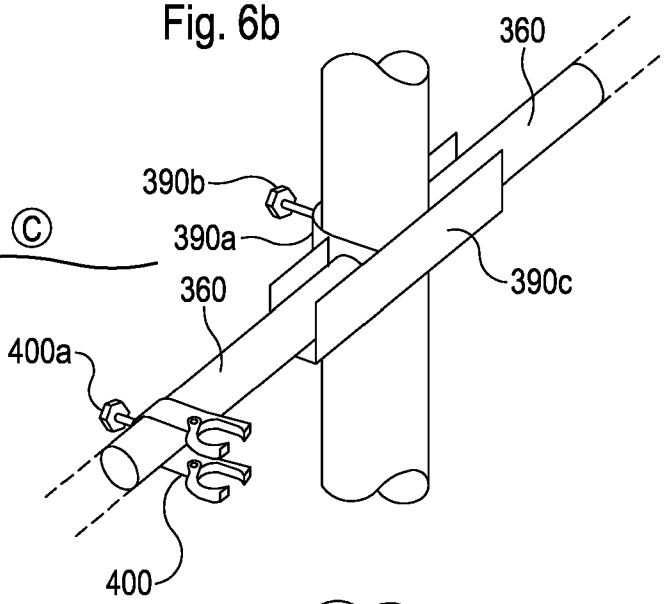
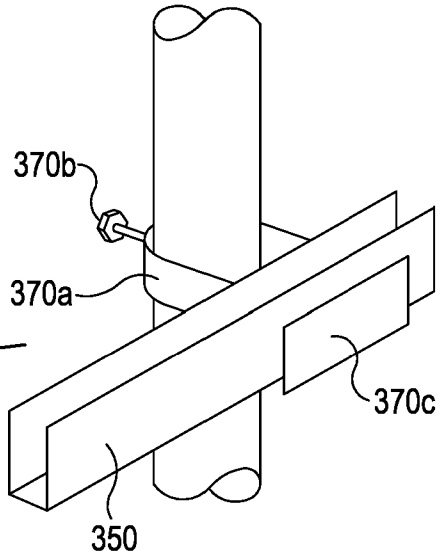


Fig. 6b





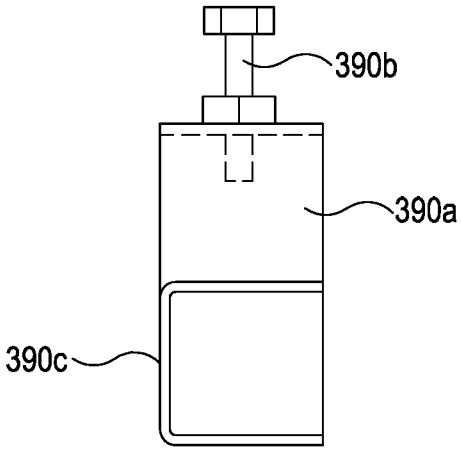


Fig. 7a

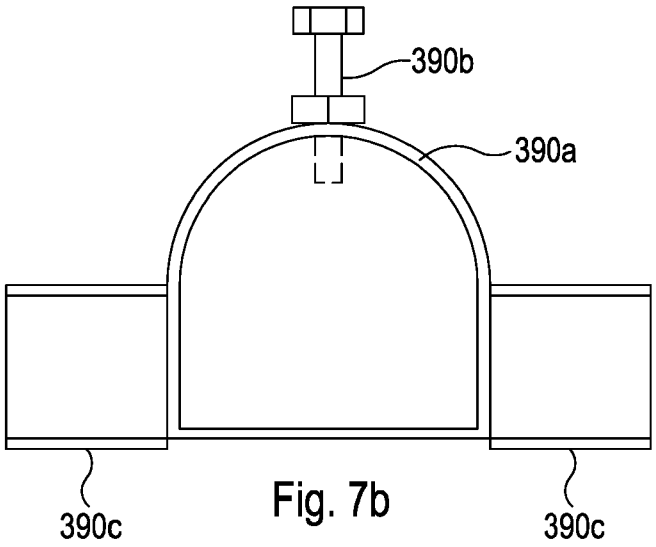


Fig. 7b

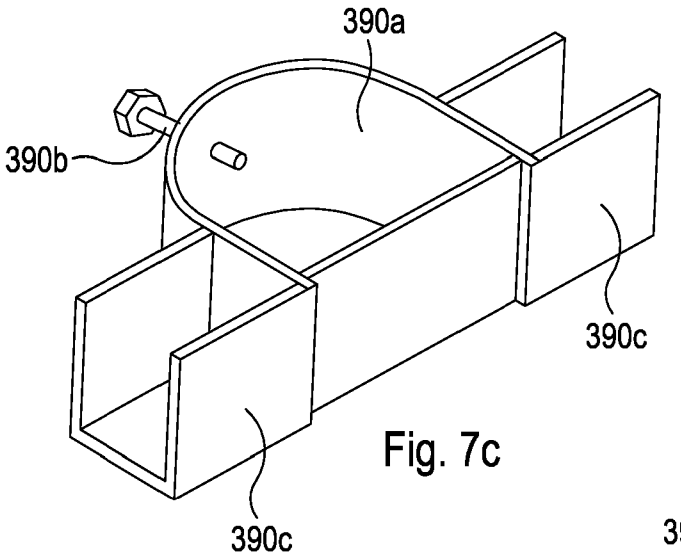


Fig. 7c

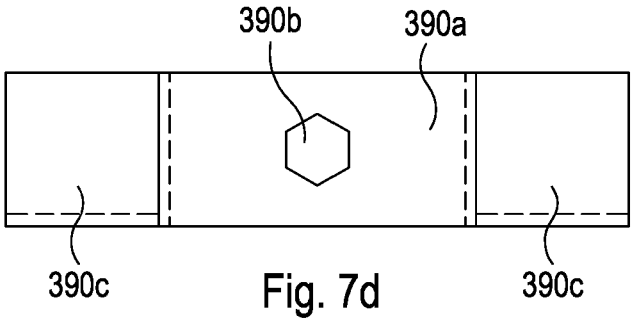


Fig. 7d

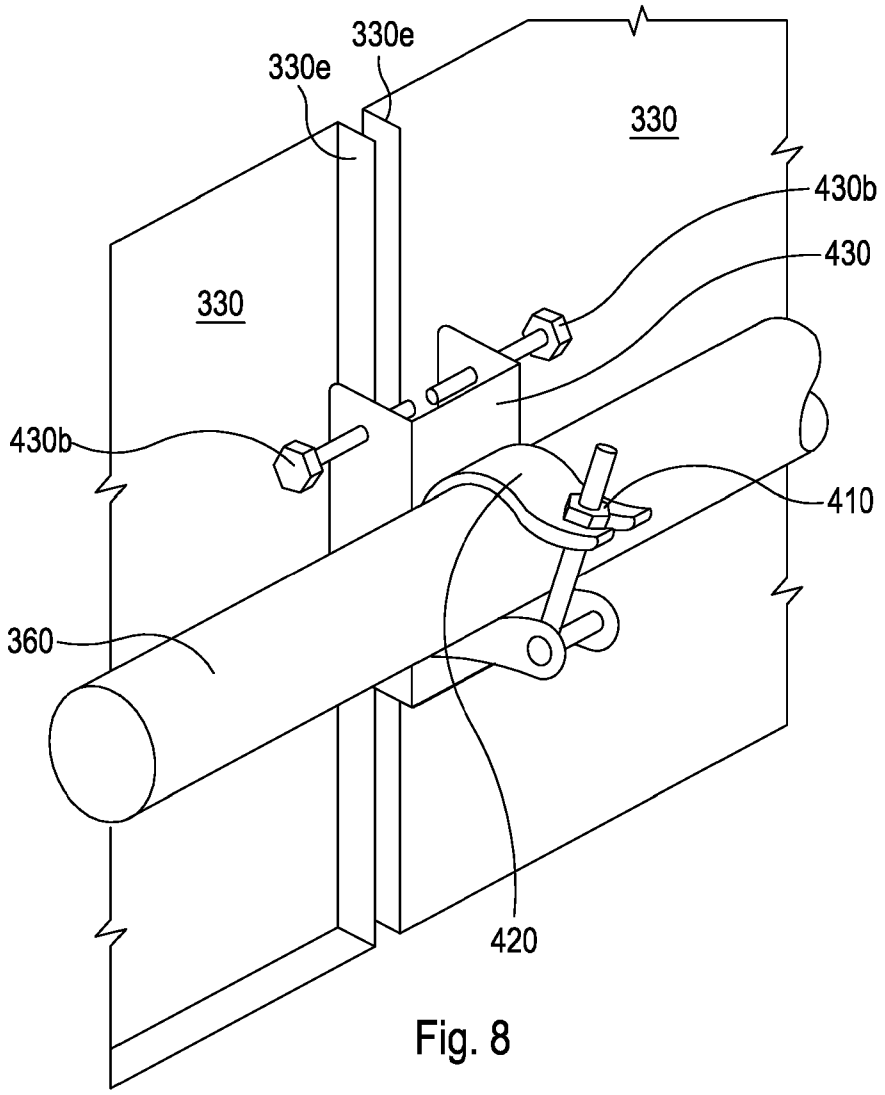


Fig. 8

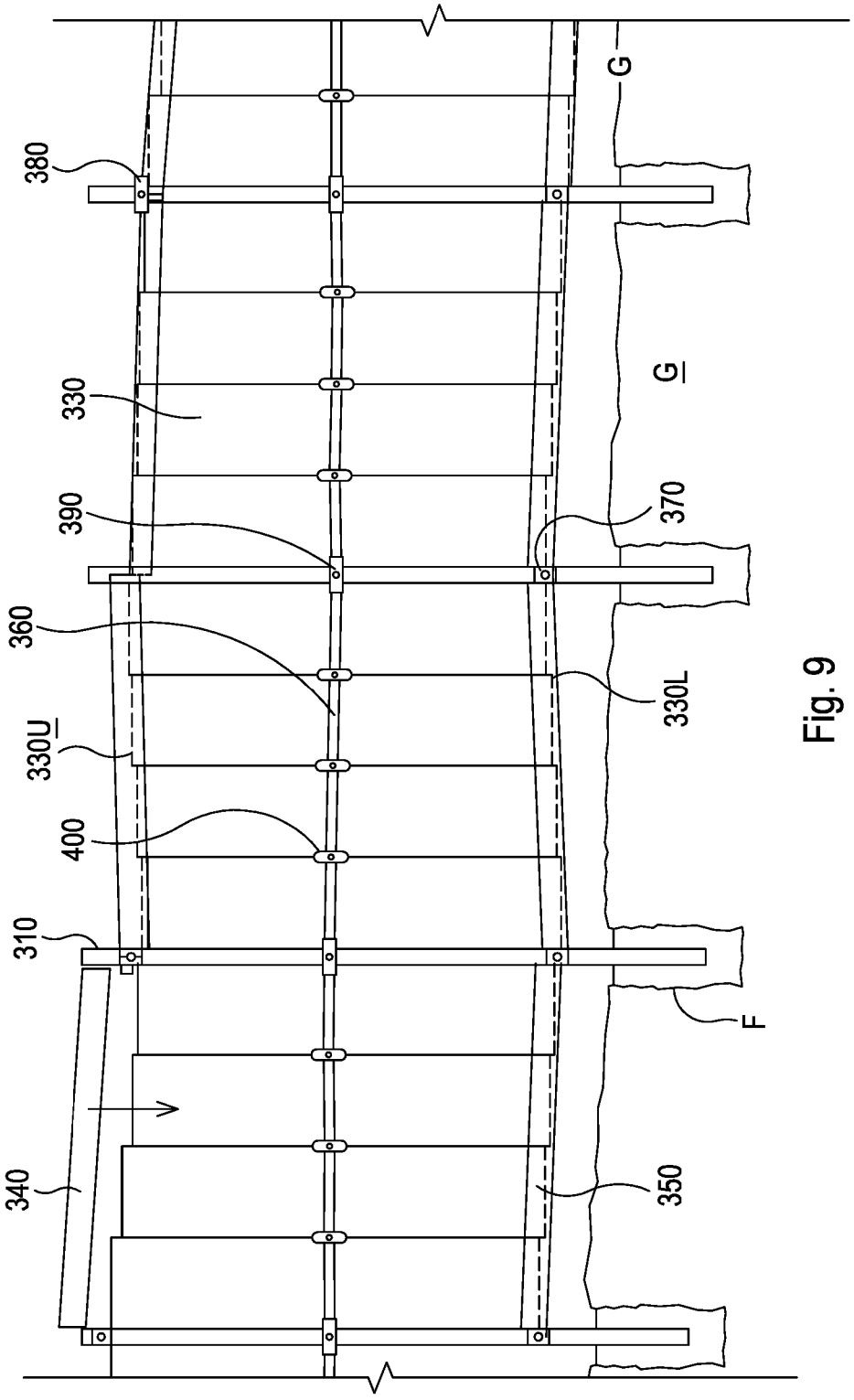


Fig. 9

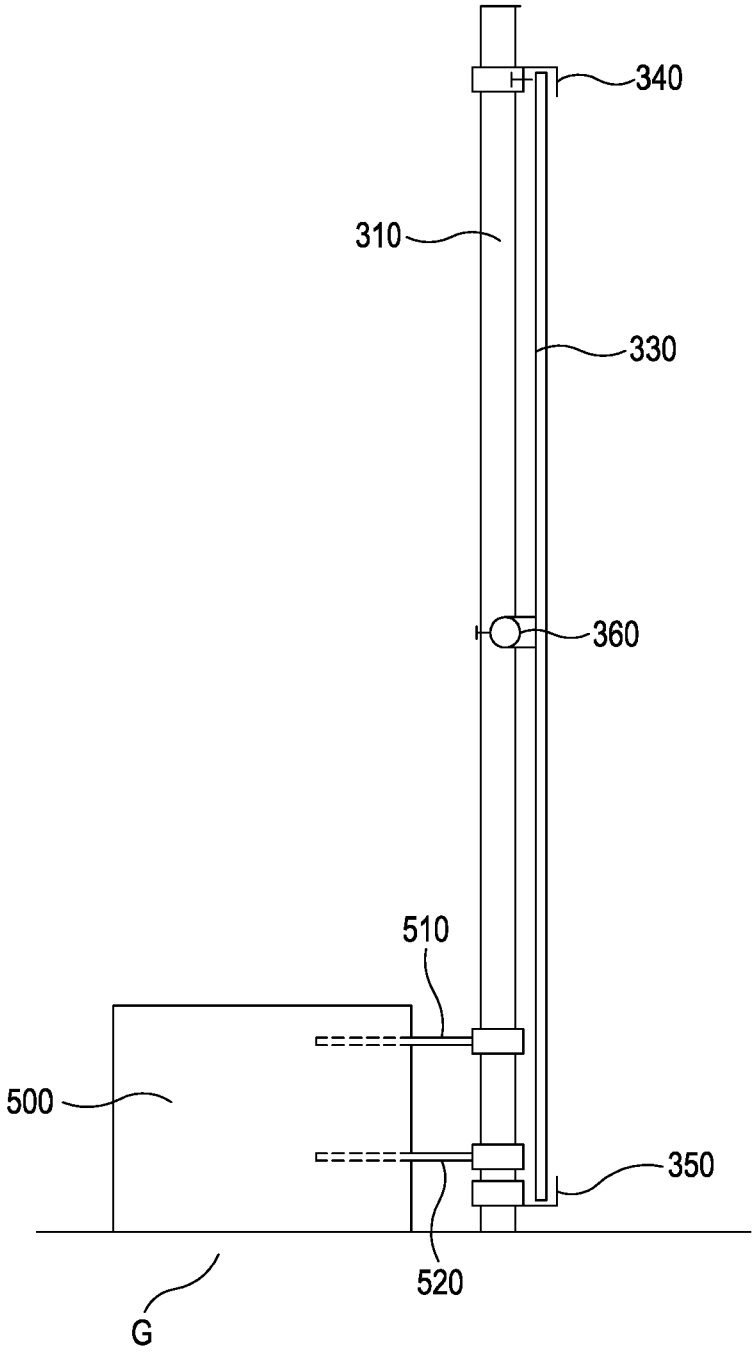


Fig. 10

Hoarding and Method of Assembly

The present invention relates to a hoarding, and to a method of assembling a hoarding, and is concerned particularly, although not exclusively, with a hording designed for use on uneven ground, and with a method for assembling such a hoarding.

Temporary enclosures are used in many situations to prevent unwanted or unauthorised access to a space. One such application is on a construction site, where it is often a requirement that members of the public be prevented from accessing the site for reasons of their own safety, and sometimes to prevent theft of plant and/or materials from the site. A temporary wall, known as a hoarding, is usually erected around the perimeter of the site.

In the past, such temporary structures have been made of wood, and have comprised a series of wooden posts concreted into holes in the ground at intervals around the perimeter, with plywood sheets or panels then affixed thereto.

One problem with enclosures of this kind is that the wooden panels, and sometimes the posts, become damaged over time due to exposure to the elements, particularly rainwater. This problem becomes greater the longer the site is under construction. Another problem arises when construction ends and the enclosure must be disassembled and removed. It is often difficult and time consuming to remove the panels from the posts, and to remove the posts from the ground, so that the most cost-effective approach is often to destroy the enclosure rather than re-use it.

Another previously considered enclosure utilises upright steel posts with scaffold tubes spanning between them onto which the panels are secured. These are less affected by the problem of weather damage, but are still time consuming to assemble and disassemble, not least because of the number of components used.

In our UK Patent Number GB2300435, the entire contents of which are incorporated herein by reference, we proposed a temporary fencing system that addresses the above-mentioned problems.

However, a further problem exists when the hoarding is to extend over ground which is uneven, sloping or undulating. Previously considered systems are unable to accommodate the variance in height of the ground surface without either leaving spaces of different heights beneath the panels or else leaving uneven gaps between adjacent panels, both of which are undesirable from a security perspective and an aesthetic one.

Embodiments of the present invention aim to provide a hoarding and a method of assembling a hoarding in which the abovementioned problems are addressed.

The present invention is defined in the attached independent claims, to which reference should now be made. Further, preferred features may be found in the sub-claims appended thereto.

According to one aspect of the present invention, there is provided a hoarding system comprising a plurality of upright supports, a plurality of panels, at least one upper edge channel member for receiving an upper edge of at least one of the panels, at least one lower edge channel member for receiving a lower edge of at least one of the panels, and at least one intermediate support rail for supporting at least one of the panels at a point between its upper and lower edges, the support rail and the upper and lower edge channel members each being arranged in use to be mounted to at least one of the upright supports.

Preferably the, or each, upper edge channel member is mountable on at least one upright support by at least one upper edge channel member mounting bracket. Preferably the, or each, lower edge channel member is mountable on at least one upright support by at least one lower edge channel member mounting bracket.

The, or each, intermediate support rail is preferably mountable on at least one upright support by at least one intermediate support rail mounting bracket.

In a preferred arrangement, the upright supports comprise poles, more preferably steel poles. The upright supports may be mounted in use in or on a ground surface by placing them in a foundation in the ground, by mounting them in a spigot - for example a sacrificial spigot - in the ground or by mounting them to a ballast support on the ground, or by a combination of two or more of these.

The panel members are preferably arranged in use to be mounted to the intermediate support rail by coupling members located on the rail. The panels are preferably arranged to be connected to the rails so that a longitudinal extent of the panel is substantially vertical.

According to another aspect of the present invention, there is provided a method of assembling a hoarding system comprising a plurality of upright supports, and a plurality of panels, the method comprising locating a lower edge of a panel in a lower edge channel member mounted to at least one of the upright supports, connecting the panel, at a location between its upper and lower edges, to an intermediate support rail mounted to at least one of the upright supports and locating an upper edge of at least one of the panels in an upper edge channel member mounted to at least one of the upright supports.

The invention may include any combination of the features or limitations referred to herein, except such a combination of features as are mutually exclusive, or mutually inconsistent.

A preferred embodiment of the present invention will now be described, by way of example only, with reference to the accompanying diagrammatic drawings, in which:

Figure 1(a) is a schematic side view of a first previously considered hoarding system;

Figure 1(b) is a schematic side view of a second previously considered hoarding system;

Figure 2 is a schematic front view of a previously considered hoarding system installed on undulating ground in a first configuration;

Figure 3 is a schematic front view of a previously considered hoarding system installed on undulating ground in a second configuration;

Figure 4 is a schematic view of a hoarding in accordance with an embodiment of the present invention, installed on sloping ground;

Figure 5 shows schematically a part of the installation of Figure 4 in more detail;

Figures 6(a) and 6(b) show schematically respectively in side view and perspective view parts of a hoarding according to an embodiment of the present invention;

Figures 7(a) to 7(d) is a set of detailed views, respectively from the side, from above, in perspective and from the rear, of a support rail bracket of Figures 6(a) and 6(b);

Figure 8 is a detailed view of a part of an intermediate support rail of the hoarding of Figures 6(a) and 6(b);

Figure 9 is a schematic view from behind the hoarding of Figures 6(a) and 6(b); and

Figure 10 is a side view of an alternative embodiment.

Turning to Figure 1(a), this shows generally at 100 a previously considered example of a hoarding system. The hoarding system 100 comprises a series of timber posts 110 individually mounted upright in concrete foundations F (only one post shown). Between the upright posts 110 are horizontal timber rails 120 which carry hoarding fascia panels 130, mounted thereon by fixings such as screws or nails, which may carry decorative or informative graphics (not shown). At respective upper and lower edges of the fascia panels are flashing members 140 and 150 are added partly to protect the edges of the panels and mostly to provide an aesthetically appealing finish.

Figure 1(b) shows generally at 200 an alternative previously considered hoarding system in which upright posts 210 are of steel lattice attached to which are horizontal rails in the form of scaffold tubes 220. Panels 230 are mounted onto the tubes 220 using clips (not shown) and again flashing members 240 and 250 complete the panels aesthetically.

A particular problem arises when the hoarding is erected on sloping, uneven or undulating ground. Figure 2 shows such a situation, in which a hoarding according to the embodiment of Figure 1(b) has been erected on an undulating ground surface G. The panels have been mounted on the horizontal scaffold rails 220, partly shown in broken lines, so that the panels 230 are upright - i.e. vertically mounted with their edges abutting vertically. This permits any graphics (not shown) carried by the panels to be represented as

intended, and also makes for an aesthetic appearance. However, because of the undulating ground surface, a gap, indicated as g between the lower edge of the hoarding and the ground varies. This can give rise to a security risk, as would-be intruders might be able to crawl beneath the hoarding at places where the gap is at its greatest.

If attempts are made to make the lower edges of the panels follow the undulations in the ground surface, the situation depicted in Figure 3 arises, wherein the panels 230 become misaligned, with the consequences that any continuous graphics on the panels are compromised. The inevitable gaps between adjacent panels also present a potential security risk.

Figure 4 shows schematically a hoarding, according to an embodiment of the present invention, installed on undulating or sloping ground. The hoarding, represented generally at 300, is shown in front view (i.e. as viewed from outside a perimeter created by the hoarding), and comprises a plurality of upright posts 310 and panels 330. At their lower edges 330l the panels are supported in lower edge channel members 350 and at their upper edges 330u the panels are located within upper edge channel members 340, as will be described later. The hoarding generally follows the contour of the ground surface G and the panels 330 are all upright and abutting one another along their neighbouring upright edges. Figure 5 is an enlarged view of part of the hoarding shown inside Circle A.

From Figure 5 it can be seen that the lower edges 330l of the installed panels are substantially horizontal. Because of this, in regions where the lower edge channel member is not horizontal, the panels are supported on a lower corner by the member 350.

Figure 6(a) shows in side view the components of the hoarding system 300 according to an embodiment of the present invention. Alongside, Figure 6(b) shows enlarged perspective views of parts of the system 300 shown inside circles B, C and D, with the panel omitted for clarity.

From Figures 6(a) and 6(b) it can be seen that the panel 330 is supported at its lower edge 330l on the lower edge channel member 350 and that the upper edge 330u of the panel is located in the upper edge channel member 340. At a point generally equidistant between its upper and lower edges, the panel is mounted to an intermediate support rail 360.

Furthermore, the lower edge channel member 350 is mounted on the post 310 by a lower edge channel member support bracket 370, the upper edge channel member 340 is mounted on the post 310 by an upper edge channel member support bracket 380 and the intermediate support rail 360 is mounted on the post 310 between a pair of intermediate support rail mounting brackets 390 (themselves mounted on successive posts along the hoarding).

The bracket 370 comprises a post-coupling portion 370a which extends around the post 310 and releasably secures thereto using a tightening fixture 370b, such as a nut. The bracket

370 also has a channel portion 370c which is dimensioned to receive a part of the lower edge channel member 350.

The bracket 380 comprises a post-coupling portion 380a which extends around the post 310 and releasably secures thereto using a tightening fixture 380b, such as a nut. The bracket 370 also has a channel portion 380c which is dimensioned to receive a part of the upper edge channel member 340. Additionally, a second tightening fixture 380d, which may comprise a nut, is provided on the channel portion 380c for securing the member 340.

The channel portions 370c and 380c open towards one another, to hold the lower and upper edges of the panel between them.

Also shown in more detail in Figures 7(a) to 7(d), respectively from the side, from above, in perspective and from the rear, the intermediate support rail mounting bracket 390 comprises a post-coupling portion 390a which extends around the post 310 and releasably secures thereto using a tightening fixture 390b, such as a nut. The bracket 390 also has two channel portions 390c extending either side of the post, which are each dimensioned to receive end parts of rails 360. Tightening fixtures (not shown) can be provided to securely hold the ends of the rails in the channel portions 390c, but in most cases the weight of the rail is sufficient to keep it in the channel.

Slideably mounted on the rail 360 is an adjustable coupler/clip member 400, which may be secured in position on the rail using a tightening fixture 410, such as a bolt. In

this embodiment the coupler/clip 400 connects to the panels 330 as shown in Figure 8. The clip 400 comprises a rail-mounted bracket 420 and a panel bracket 430 for connecting to, and securing together, flanged edges 330e of adjacent panels 330 in the hoarding. The panel bracket 430 comprises a channel section that is dimensioned to span the edges 330e of adjacent panels. A pair of tightening fixtures 430b, such as bolts, is provided to ensure a firm engagement between the clips and the panels. Other connectors for securing the panels to the intermediate support rails could be used as alternatives.

Turning to Figure 9, this shows the part of the hoarding 300 partially erected and from the rear - i.e. from the inside of the area enclosed by the hoarding. After the posts 310 have been erected, the lower channel members 350 are mounted to the posts, using brackets 370, in such a way that the channel members 350 substantially follow the contour of the ground surface G. Then, using brackets 390, the intermediate support rails 360 are mounted to the posts at positions approximately half way along the expected height of the panels 330. The rails 360 should be arranged in a substantially horizontal configuration, regardless of the orientation of the lower channel members 350. The tightening fixtures 370b and 390b are loosely tightened. Then, one by one, the panels 330 are placed, with their lower edges 330l inside the lower channel members 350 before each is raised up to the rail 360. Then the panels are arranged substantially vertically before they are secured together at their edges by the clips 400. They are then held in an upright configuration. Any of the channel members 350 that

are not substantially horizontal will support only part of the lower edge 330l of the panel 330, as shown in the broken lines in the drawing. However, when the panel is supported by the lower channel 350 and the rail 360 it will be securely held in a substantially vertical configuration. At this point the panels are mounted, but some adjustment is still possible. The bolts 370b and 390b may then be tightened when the final position of the panels is settled. Finally, the upper channel members 340 may be mounted to the posts 310, using brackets 380, and lowered over the upper edges 330u of the panels to retain the panels securely and also to create a neat appearance. The bolts 380b are tightened to complete the installation.

The gap below the hoarding panels/edge channels and the ground surface is substantially consistent, even though the ground itself undulates.

The panels are typically of composite materials, while the posts, channel members, rails and brackets are of steel. The clips may be formed from resilient plastics material, such as nylon.

In the embodiment described above, the posts are fixed into concrete foundations in the ground. As an alternative, they may be mounted in spigots that are themselves concreted into the ground or else they may be supported by a ballast block mounting on the ground surface, as depicted in Figure 10. In this arrangement, a ballast block 500 is placed on the ground surface G and a pair of vertically spaced post supports 510 and 520, which are adjustably fixed to the block 500 and

extend therefrom, are coupled to the post 310. This makes it relatively straightforward to disassemble the hoarding and reuse all of its components, whilst leaving the ground undisturbed.

Hoarding systems according to the present invention are designed to be reusable and to provide a flat, continuous surface that is ideal for advertising.

The lower edge channel members support the weight of the panels vertically and also, together with the upper edge channel members and the intermediate rails, they provide resistance to loading, for example by wind or by crowds pressing against the panels.

The upper and lower edge channel members also take the place of the flashing members used at the top and bottom of the panels on previously considered hoarding systems, thereby serving both structural and aesthetic purposes and thus minimising the number of components that must be supplied, used, transported and stored, and also minimising the time taken for installation and disassembly.

The intermediate rails with the couplers 400 hold the panels substantially vertical, even when the ground surface is varying and they allow the panels to be held in abutment, edge to edge, as the couplers can slide on the rails before being fixed into position. The rails also prevent the panels from bowing or buckling due to loading, e.g. from wind or crowds, which might otherwise cause them to become dislocated from their edge channels.

Furthermore, hoardings according to embodiments of the invention advantageously do not require the panels to be nailed or screwed to their support structure, in contrast with previously considered hoarding systems. As well as saving installation time, this avoids compromising the structural and aesthetic integrity of the panels.

Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance, it should be understood that the applicant claims protection in respect of any patentable feature or combination of features referred to herein, and/or shown in the drawings, whether or not particular emphasis has been placed thereon.

CLAIMS

1. A hoarding system comprising a plurality of upright supports, a plurality of panels, at least one upper edge channel member for receiving an upper edge of at least one of the panels, at least one lower edge channel member for receiving a lower edge of at least one of the panels, and at least one intermediate support rail for supporting at least one of the panels at a point between its upper and lower edges, the support rail and the upper and lower edge channel members each being arranged in use to be mounted to at least one of the upright supports.

2. A hoarding system according to Claim 1, wherein the, or each, upper edge channel member is mountable on at least one upright support by at least one upper edge channel member mounting bracket.

3. A hoarding system according to Claim 1 or 2, wherein the, or each, lower edge channel member is mountable on at least one upright support by at least one lower edge channel member mounting bracket.

4. A hoarding system according to any of the preceding claims, wherein the, or each, intermediate support rail is mountable on at least one upright support by at least one intermediate support rail mounting bracket.

5. A hoarding system according to any of the preceding claims, wherein the upright supports comprise poles.

6. A hoarding system according to any of the preceding claims, wherein the upright supports are mounted in use in or on a ground surface by placing them in a foundation in the ground, by mounting them in a spigot - for example a sacrificial spigot - in the ground or by mounting them to a ballast support on the ground, or by a combination of two or more of these.

7. A hoarding system according to any of the preceding claims, wherein the panel members are arranged in use to be mounted to the intermediate support rail by coupling members located on the rail.

8. A hoarding system according to any of the preceding claims, wherein the panels are arranged to be connected to the rails so that a longitudinal extent of the panel is substantially vertical.

9. A method of assembling a hoarding system comprising a plurality of upright supports, and a plurality of panels, the method comprising locating a lower edge of a panel in a lower edge channel member mounted to at least one of the upright supports, connecting the panel, at a location between its upper and lower edges, to an intermediate support rail mounted to at least one of the upright supports and locating an upper edge of at least one of the panels in an upper edge channel member mounted to at least one of the upright supports.

Intellectual Property Office

Application No:	GB2104335.1	**Examiner:**	Contract Unit Examiner
Claims searched:	1-9	**Date of search:**	26 November 2021

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-9	DE19511906 A1 (PLETTAC AG) column 5, lines 38-57; figures 1-7
A	-	US2004/012007 A1 (CUMMINGS TOMMY JOE) claim 1; figures 1, 10, 11
A	-	CA1055289 A (KIRKWOOD ROBERT E) claim 1; figures 1-3
A	-	KR200464598 Y1 (PARK Y S) claim 1; figures 2, 3, 4
A	-	GB2300435 A (S & B BUILDING EQUIPMENT LTD) the whole document

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

E04G; E04H; G09F

The following online and other databases have been used in the preparation of this search report

International Classification:

Subclass	Subgroup	Valid From
E04H	0017/16	01/01/2006
E04G	0021/32	01/01/2006
E04H	0017/18	01/01/2006